EXHIBIT 1

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

INTERNATIONAL BUSINESS MACHINES CORPORATION, Plaintiff, v. GROUPON, INC. Defendant.	C.A. No. 16-122-LPS-CJB JURY TRIAL DEMANDED

FINAL INVALIDITY CONTENTIONS OF DEFENDANT GROUPON, INC.

Pursuant to the Court's October 3, 2016 Order (D.I. 17) and July 28, 2017 Order (D.I. 181.1), Defendant Groupon, Inc. ("Groupon") makes the following disclosure of Final Invalidity Contentions to Plaintiff International Business Machines Corporation ("IBM") regarding the currently asserted claims of United States Patent Nos. 5,796,967 (the "'967 patent"), 7,072,849 (the "'849 patent"), 5,961,601 (the "'601 patent"), and 7,631,346 (the "'346 patent"), collectively referred hereto as the "patents-in-suit." In its August 25, 2017 Final Infringement Contentions ("Infringement Contentions"), IBM asserts claims 1-7, 12, and 17 of the '967 patent, claims 1-9, 12-22, and 25 of the '849 patent, claims 1-12 and 51-59 of the '601 patent, and claims 1-3, 5, 8, 10, 12, and 13 of the '346 patent[1] (collectively, the "Asserted Claims").

[1] Claims 1, 3, 12, 14, 15, and 18 of the '346 patent were recently held unpatentable as anticipated by Japanese Publ'n No. Tokkai 2004-302907A ("Sunada") by the U.S. Patent and Trademark Office ("PTO") on August 7, 2017. *See* IPR2016-00608, Paper No. 67. In a separate decision, the PTO also held that claims 1, 3, 12, 13, 15, and 18 of the '346 patent are unpatentable as

This final disclosure is based on the Court's August 3, 2017 Order of Claim Construction (D.I. 121), the parties' agreed constructions set forth in the Supplemental Joint Claim Construction Chart (D.I. 64), Groupon's present understanding of the un-construed terms of the Asserted Claims, and Groupon's present understanding of IBM's interpretation of the claims of the patents-in-suit as advanced by IBM in its Infringement Contentions. Other than the Court's constructions, nothing in Groupon's disclosures should be regarded as necessarily reflecting the proper interpretation of the claims or an interpretation of the claims Groupon agrees with or proposes. Groupon disputes IBM's apparent claim interpretations to the extent they are inconsistent with the Court's or the parties' agreed claim constructions.

Groupon reserves the right to amend and supplement these disclosures consistent with the Court's Scheduling Order (D.I. 17) or otherwise as the Court may allow. For example, Groupon reserves the right to amend these Final Invalidity Contentions should IBM produce additional information, provide any information that it failed to provide in its Infringement Contentions, or should IBM amend its Infringement Contentions in any way.

Further, Groupon may amend or supplement this disclosure because IBM's infringement disclosures are deficient in numerous respects. For example, IBM has failed to specifically identify where each element of each Asserted Claim is found within each accused instrumentality. IBM has failed to identify the type of conduct alleged to infringe or the persons or entities that allegedly engage in such conduct. IBM has also failed to identify specifically whether each

---

anticipated by U.S. Patent No. 7,680,819 ("Mellmer"). *See* IPR2016-00609, Paper No. 42. Accordingly, claims 1, 3, 12, and 13 asserted against Groupon in this action are invalid. However, Groupon provides additional analysis regarding these invalid claims herein as IBM has not withdrawn assertion of these claims in this action.

limitation is purportedly literally present or present under the doctrine of equivalents in each accused instrumentality. Because curing such deficiencies may lead to further grounds for invalidity and non-infringement, Groupon specifically reserves the right to modify, amend, or supplement this disclosure should IBM amend or supplement its Infringement Contentions.

Groupon may also amend this disclosure in response to any positions taken by IBM during the course of the litigation, including without limitation any additional claim construction positions IBM takes or any contention by IBM that the prior art references described herein fail to render the Asserted Claims anticipated or obvious. Groupon reserves the right to amend these Final Invalidity Contentions to rely upon inventor and party admissions concerning the scope of the Asserted Claims and the teachings of the prior art and in response to any additional claim construction order from the Court.

I. FINAL INVALIDITY CONTENTIONS

Groupon's prior art reference charts (attached hereto as Exhibits A1-A30, B1-B27, C1-C28 and D1-25) identify where specifically in each item of prior art each element of each asserted claim is found, citing particular teachings/disclosure of the referenced art as applied to features of the patents-in-suit. While each element of each asserted claim is found in each item of prior art in multiple locations, the attached charts provide examples of citations sufficient to identify at least one such location where each claim limitation is found in each item of prior art. The citations are exemplary and not exclusive, and Groupon reserves the right to rely on uncited portions of the prior art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context to them, and as additional evidence that the prior art discloses a claimed feature. Indeed, persons of skill in the art generally would understand an item of prior art in the context of other publications, literature, products, and understanding. Thus, Groupon reserves the right to establish what was known to a person having ordinary skill in

the art through other publications, products, and/or testimony. Further, Groupon reserves the right to modify, amend, and/or change its interpretation of the prior art as additional or new constructions of the claim limitations may be provided by the Court, based on additional analysis by Groupon's technical expert witnesses, or based on other circumstances that may affect the interpretation or application of the claims.

The following lists provide the identity of each item of prior art patent, publication, or system that anticipates one or more of the asserted claims of the patents-in-suit or renders one or more of the asserted claims of the patents-in-suit obvious.

U.S. Patent No. 5,796,967

Exhibit	Short Name
A01	Tornetta
A02	Hernandez
A03	CompuServe Navigator
A04	Designing Xerox
A05	Xerox Star
A06	HyperCard
A07	Yourick
A08	Teitelman
A09	Salomon
A10	Satyanarayanan
A11	Henderson
A12	Hedges
A13	CLAM
A14	Caplinger
A15	Agarwal
A16	CIM
A17	Alber
A18	Arlen

A19	Interactive Architecture
A20	Power of NAPLPS
A21	Gecsei
A22	Morris
A23	Smith
A24	Talarzyk
A25	Akscyn
A26	Halasz
A27	Irven
A28	Trintex
A29	Rose
A30	Terry

Groupon further contends that to the extent the Asserted Claims are not anticipated by the above-identified references, the asserted claims the ’967 patent are invalid as rendered obvious by at least the following combinations:

- Morris (A22) in view of Xerox Star (A05);
- Morris (A22) in view of Xerox Star (A05) and Salomon (A09);
- Morris (A22) in view of Xerox Star (A05) and Satyanarayanan (A10);
- Trintex System, as described in the publications and documents describing Trintex (A28);
- Apple HyperCard System, as described in the publications and documents describing HyperCard (A06) and in Rose (A29);
- HyperCard (A06) in view of Rose (A29) and Terry (A30);
- The Information Technology Center System (“ITC”), as described in Satyanarayanan (A10), in view of Xerox Star (A05);
- Xerox Star (A05) in view of Terry (A30);

- Xerox Star (A05) in view of Salomon (A09), Terry (A30), and Talarzyk (A24);
- Caplinger (A14) in view of Gecsei (A21);
- Teitelman (A08) in view of Morris (A22), Salomon (A09), and Talarzyk (A24);
- Interactive Architecture (A19) in view of Terry (A30); and
- Arlen (A18) in view of Interactive Architecture (A19) and Terry (A30).

U.S. Patent No. 7,072,849

Exhibit	Short Name
B01	Alber
B02	Bado
B03	Caplinger
B04	CompuServe Navigator
B05	Freeman ’279
B06	Humble
B07	Malec
B08	Salomon
B09	Simon
B10	Talarzyk
B11	Telesophy 1985
B12	Telesophy 1987
B13	Trintex System
B14	Yourick
B15	Beyond Videotex
B16	Interactive Architecture
B17	Power of NAPLPS
B18	TextUp
B19	Nisenholtz
B20	CompuServe Information Manager
B21	Gecsei

B22	ITC Project
B23	Akscyn
B24	Halasz
B25	Irven
B26	Morris
B27	Wilson

Groupon further contends that to the extent the Asserted Claims are not anticipated by the above-identified references, the asserted claims the '849 patent are invalid as rendered obvious by at least the following combinations:

- Trintex System, as described in the publications and documents describing Trintex (B13);
- Trintex (B13) in view of Simon (B09);
- Trintex (B13) in view of Alber (B01);
- Trintex (B13) in view of Simon (B09) and Alber (B01);
- Trintex (B13) in view of Simon (B09) and Wilson (B27);
- Trintex (B13) in view of Simon (B09), Alber (B01), and Wilson (B27);
- Salomon (B08) in view of Alber (B01);
- Talarzyk (B10) in view of Caplinger (B03);
- The ITC Project System, as described in Satyanarayanan and Morris (B22), in view of Salomon (B08);
- Power of NAPLPS (B17) in view of Talarzyk (B10);
- Power of NAPLPS (B17) in view of Alber (B01);
- Interactive Architecture (B16) in view of Alber (B01); and
- Interactive Architecture (B16) in view of Alber (B01) and Caplinger (B03);

U.S. Patent No. 5,961,601

Exhibit	Short Name
C01	Danish
C02	Diener
C03	DuFresne
C04	Farquhar
C05	Graber
C06	Ibrahim
C07	Levergood
C08	Levine
C09	Lewine
C10	Minor
C11	Payne
C12	Perrochon
C13	Popp
C14	Da Silva
C15	Tobin
C16	OCLC Gateway
C17	WebStar
C18	Unleashed
C19	Admitted Prior Art
C20	Yoshida
C21	Yan
C22	Chiu ’022
C23	Lewine ’565
C24	WWW-Talk
C25	Freeman-Benson
C26	Spinning the Web
C27	Amazon 1995 Website
C28	Williams

Groupon further contends that to the extent the Asserted Claims are not anticipated by the above-identified references, the asserted claims the '601 patent are invalid as rendered obvious by at least the following combinations:

- Unleashed (C18);
- Unleashed (C18) in view of Danish (C01);
- Unleashed (C18) in view of Williams (C28);
- Graber (C05) in view of Danish (C01);
- Graber (C05) in view of Chiu '022 (C22);
- Graber (C05) in view of Admitted Prior Art (C19);
- Graber (C05) in view of Williams (C28);
- Graber (C05) in view of Ibrahim (C06);
- WebStar (C17) in view of Admitted Prior Art (C19);
- WebStar (C17) in view of Danish (C01);
- WebStar (C17) in view of Williams (C28);
- Online Computer Library Center Electronic Journals Online WWW Gateway System ("OCLC Gateway"), as described in the publications and documents describing OCLC Gateway (C16);
- Spinning the Web (C26);
- Spinning the Web (C26) in view of Williams (C28) or Unleashed (C18) and Danish (C01); and
- The Amazon 1995 Website (C27) in view of in view of Williams (C28), or Unleashed (C18) and Danish (C01)

U.S. Patent No. 7,631,346

Exhibit	Short Name
D01	FIM
D02	Bladow
D03	Chawla ’492
D04	Chawla ’696
D05	Doshi
D06	Dutcher
D07	Grandcolas
D08	Harris
D09	Kelly
D10	Levergood
D11	Mellmer
D12	Moreh
D13	Purpura
D14	Sunada
D15	Ting
D16	Weissman
D17	Yared
D18	Erdos
D19	DigitalMe
D20	Pfitzmann
D21	Admitted Prior Art
D22	Demchenko

D23	Kirschner
D24	Sullivan
D25	Liberty Alliance

Groupon further contends that to the extent the Asserted Claims are not anticipated by the above-identified references, the asserted claims the '346 patent are invalid as rendered obvious by at least the following combinations:

- Sunada (D14);
- Mellmer (D11);
- Liberty Alliance (D25);
- Sunada (D14) in view of Pfitzmann (D20);
- Mellmer (D11) in view of Pfitzmann (D20);
- DigitalMe (D19) in view of Pfitzmann (D20);
- Grandcolas (D07) in view of Admitted Prior Art (D21);
- Grandcolas (D07) in view of Pfitzmann (D20);
- Yared (D17) in view of Pfitzmann (D20);
- Liberty Alliance Specifications (D25);
- Liberty Alliance Specifications (D25) in view of Harris (D08);
- Liberty Alliance Specifications (D25) in view of Grandcolas (D07);
- Liberty Alliance Specifications (D25) in view of Grandcolas (D07) and Harris (D08);
- Liberty Alliance Specifications (D25) in view of Sunada (D14); and
- Liberty Alliance Specifications (D25) in view of Sunada (D14) and Harris (D08).

A. General State of the Art and Motivation to Combine

The following list identifies prior art references that establish the general state of the art at the time of each of the patents-in-suit. This list is not exhaustive and Groupon may supplement and amend this list as its investigation continues and the case progresses. Groupon may also supplement and amend this list based on any information it gleans from expert or other witness testimony in either this case or the *Priceline* case.

U.S. Patent No. 5,796,967

Prior Art Patents and Patent Applications

Patent Number	Country of Origin	Date of Issue/ Publication
US 4,870,576 ("Tornetta")	US	Sept. 26, 1980 (March 19, 1986)
US 4,962,475 ("Hernandez")	US	Oct. 9, 1990 (Dec. 26, 1984)
US 4,775,935 ("Yourick")	US	Sept. 22, 1986 (Oct. 4, 1988)
US 5,072,412 ("Henderson")	US	March 25, 1987 (Dec. 10, 1991)
US 4,339,798 ("Hedges")	US	Dec. 17, 1979 (July 13, 1982)
US 4,688,167 ("Agarwal")	US	Sept. 27, 1984 (August 18, 1987)
US 4,649,380 ("Penna")	US	Mar. 10, 1987 (June 11, 1984)
US 4,807,142 ("Agarwal '142")	US	Feb. 21, 1989 (Oct. 9, 1984)
US 4,989,141 ("Lyons")	US	Jan. 29, 1991 (June 1, 1987)
US 5,157,717 ("Hitchcock")	US	Oct. 20, 1992 (Feb. 20, 1991)
US 5,202,828 ("Vertelney")	US	Apr. 13, 1993 (May 15, 1991)
US 5,367,624 ("Cooper")	US	Nov. 22, 1994 (June 11, 1993)
US 5,375,200 ("Dugan")	US	Dec. 20, 1994 (Nov. 13, 1992)
US 5,392,400 ("Berkowitz")	US	Feb. 21, 1995 (July 2, 1992)

Patent Number	Country of Origin	Date of Issue/ Publication
US 5,432,901 ("Harper")	US	July 11, 1995 (Jan. 30, 1992)
US 5,434,963 ("Kuwamoto")	US	July 18, 1995 (Dec. 8, 1992)
US 5,463,726 ("Price")	US	Oct. 31, 1995 (Sept. 6, 1994)
US,4,689,478 ("Hale")	US	Aug. 25, 1987 (Dec. 24, 1984)

Prior Art Publications

Title	Date of Publication	Author/Publisher (short cite)
CompuServe Navigator User's Guide	January 1988	CompuServe ("CompuServe Navigator")
"Designing the Star User Interface"	April 1982	Dr. David Smith et al. / Byte Magazine, Volume 7, Issue 4 ("Byte Magazine")
Apple Macintosh HyperCard User's Guide	1987	Apple ("User's Guide")
The Complete HyperCard Handbook	1987	Danny Goodman ("Goodman")
The Complete HyperCard Handbook by Danny Goodman, Expanded 2nd Edition	1988	Danny Goodman ("Handbook")
HyperCard Developer's Guide	1988	Danny Goodman ("Developer's Guide")
"The star user interface: an overview"	1982	David Canfield Smith et al. / Proceedings of the National Computer Conference (1982) ("NCC Proceedings") ("Smith")
"The Xerox Star: A Retrospective"	September 1989	Jeff Johnson et al. / IEEE Computer, Volume 22, Issue 9 ("Johnson")
"A Tour Through Cedar"	1985	W. Teitelman / IEEE Transactions on Software Eng'g
"Design and Implementation of An Electronic Special Interest Magazine"	September 1986	Salomon / UCLA Thesis ("Salomon")

Title	Date of Publication	Author/Publisher (short cite)
"The ITC Project: An Experiment in Large-Scale Distributed Personal Computing"	October 1984	M. Satyanarayanan ("Satyanarayanan")
"CLAM – an Open System for Graphical User Interfaces"	1987	Lisa A. Call et al. ("CLAM")
"An Information System Based on Distributed Objects"	October 4-8, 1987	Michael Caplinger, ("Caplinger")
"HyperCard Made Easy"	1988	William B. Sanders / Scott, Foresman and Company ("HyperCard Made Easy")
Videotex / Teletext: Principles & Practices	1985	Antone F. Alber, McGraw-Hill, Inc. ("Alber")
"Trintex: Exclusive Status Report"	November 1986	Gary Arlen, Videotex Teletext News, No. 94 ("Arlen")
"Interactive Architecture And The Role Of The Designer"	1984	John Vaughan, Videotex Proceedings 1984 ("Interactive Architecture")
"The Power of NAPLPS: Beyond Videotex"	1985	John Vaughan, Videotex International Proceedings 1985 ("Power of NAPLPS")
The Architecture of Videotex Systems	1983	Jan Gecsei, Prentice-Hall, Inc. ("Gecsei")
"Caching Hints in Distributed Systems"	January 1987	Douglas B. Terry ("Terry")
"Hypermedia: finally here"	November 1987	Tekla S. Perry, IEEE Spectrum ("Perry")
"Custom Communications from the Consumer Databanks"	September 1987	Mick O'Leary ("O'Leary")
"Multi-Media Information Services: A Laboratory Study"	June 1988	Judith H. Irven et al. ("Irven")
"Andrew: A Distributed Personal Computing Environment"	March 1986	James H. Morris et al. ("Morris")
"Menlo Corporation's Pro-Search: Review of a Software Search Aid"	1986	Barbara Quint ("Quint")
"Foreshadowing Electronic Publishing Age: First Exposures to Viewtron"	December 1985	Tony Atwater et al. ("Atwater")
"Defining Constraints Graphically"	April 1986	Alan Borning ("Borning")

Title	Date of Publication	Author/Publisher (short cite)
"DVI - A Digital Multimedia Technology"	July 1989	David G. Ripley ("Ripley")
"The Trillium User Design Environment"	April 1986	D. Austin, Jr. Henderson ("Trillium User")
"The Consul/CUE Interface: An Integrated Interactive Environment"	December1983	Kaczmarek, T. et al. ("Kaczmarek")
"The Computer Sciences Electronic Magazine: Translating from Paper to Multimedia"	May 3, 1992	W. Randall Koons et al. ("Koons")
"KMS: A Distributed Hypermedia System for Managing Knowledge In Organizations"	November 1987	Robert Akscyn, et al. ("Akscyn")
"A Comparison Application Sharing Mechanisms Real-Time Desktop Conferencing Systems"	1990	S. R. Ahuja et al. ("Ahuja")
"Reflections on Notecards: Seven Issues for the Next Generation of Hypermedia Systems"	July 1988	Frank G. Halasz ("Halasz")
"A Tour Through Cedar"	1985	Warren Teitelman ("Teitelman")
"An Input-Output Model for Interactive Systems"	April 1986	Mary Shaw ("Shaw")
"Officeaid: An Integrated Document Management System"	1984	Allison Lee et al. ("Officeaid")
"The Visi On Operating Environment"	September 1983	William T. Coleman III et al. ("Coleman")
"An Experimental Multi-Media Bridging System"	1988	E.J. Addeo et al. ("Addeo")
"A Multiple, Virtual-Workspace Interface Support User Task Switching"	1987	Stuart K. Card et al. ("Card")
"gIBIS: A Hypertext Tool for Team Design Deliberation"	November 1987	Conklin, Jeff et al. ("Conklin")
"A Control Panel Interface for Graphics and Image Processing Applications"	1987	Gene I. Fisher et al. ("Fisher")
"HDM: A Model for the Design of Hypertext Applications"	December 1991	Franca Garzotto, et al. ("Garzotto")

Title	Date of Publication	Author/Publisher (short cite)
"Enhancing the Usability of an Office Information System Through Direct Manipulation"	December 1983	Allison Lee et al. ("Office Information System")
"Domain Delphi: Retrieving Documents Online"	April 1986	Penny Orwick ("Orwick")
"Teletext and Videotex in the United States: Market Potential Technology Public Policy Issues"	1982	John Tydeman et al. ("Tydeman")
"New Package Rates"	July 7, 1987	Peter Helmer ("IBM-GROUPON10120808")
"Notes from Product Descriptor Meeting"	March 11, 1987	Trintex ("IBM-GROUPON10100828")
"Provider Agreements [Entered] "	July 20, 1987	Thomas Witt ("IBM-GROUPON10102751")
"Reception System Technical Review"	June 1986	Trintex ("IBM-GROUPON10102910")
"Trintex Announces First Advertisers"	May 22, 1987	Trintex ("IBM-GROUPON10100493")
"Client Dates"	January 16, 1987	Susan Pechman ("IBM-GROUPON10120750")
"Coldwell Banker Invitation"	March 31, 1987	Bruce E. Bellmare ("IBM-GROUPON10102967")
"Component Level Advertising Descriptor"	January 17, 1986	Steven J. Schimmed ("IBM-GROUPON10103874")
"Dollar Bank, High Level Design"	May 5, 1987	Trintex ("IBM-GROUPON10121898")
"Dreyfus Invitation"	May 13, 1987	Bruce E. Bellmare ("IBM-GROUPON10103255")
"Trintex Product Descriptor"	February 23, 1987	Henry Heilbrunn ("IBM-GROUPON10100766")
"Contract Procedures"	February 27, 1987	Peter Helmer ("IBM-GROUPON10100914")
"Allstate Testing Letter"	May 8, 1987	Glenn Shapiro ("IBM-GROUPON10100910")
"Signed Provider Agreements"	July 8, 1987	Bruce W. Thurlby ("IBM-GROUPON10102738")
"System Architecture Overview"	February 24, 1986	A.M. Wolf ("IBM-GROUPON10120217")

Title	Date of Publication	Author/Publisher (short cite)
"Visions Document"	April 10, 1987	Henry Heilbrunn ("IBM-GROUPON10120654")
"Viewtron: How to Use"	1983	AT&T ("Viewtron Video")
The New Electronic Media "Vid-eotex"	1987	W. Wayne Talarzyk, Lex-ington Books ("Talarzyk")

Prior Art Systems/Services

Item/Service
CompuServe ("CompuServe Navigator")
CompuServe Information Manager ("CIM")
Xerox Star Information System ("Xerox Star")
Apple HyperCard
Trintex/Prodigy
Viewtron

U.S. Patent No. 7,072,849

Prior Art Patents and Patent Applications

Patent Number	Country of Origin	Date of Issue/ Publication
US 4,703,423 ("Bado")	US	Oct. 27, 1987 (July10, 1984)
US 4,602,279 ("Freeman '279")	US	July 22, 1986 (Nov. 29, 1983)
US 4,833,308 ("Humble")	US	May 23, 1989 (July 24,1986)
US 4,973,952 ("Malec")	US	Nov. 27, 1990 (Sept. 21,1987)
US 4,575,579 ("Simon")	US	Mar. 11, 1986 (Dec. 17, 1979)
US 4,775,935 ("Yourick")	US	Oct. 4, 1988 (Sept.22, 1986)
EP 0,403,232A2 ("Parillo")	US	Dec. 10, 1990 (June 12, 1990)
US 4,751,578 ("Reiter")	US	June 14, 1988

Patent Number	Country of Origin	Date of Issue/ Publication
		(May 28, 1985)
US 5,042,809 ("Richardson")	US	Aug. 27, 1991 (Nov. 20, 1990)
US 5,220,501("Lawlor")	US	June 15, 1993 (Dec. 8, 1989)
US 5,305,195 ("Murphy")	US	Apr. 19, 1994 (Mar. 25, 1992)
US 5,410,326 ("Goldstein")	US	Apr. 25, 1995 (Dec. 4, 1992)
US 6,418,556 ("Bennington")	US	July 9, 2002 (Sept. 9, 1993)
US 3,991,495 ("Wilson")	US	Nov. 16, 1976 (Dec. 4, 1974)

Prior Art Publications

Title	Date of Publication	Author/Publisher (short cite)
Videotex / Teletext: Principles & Practices	1985	Antone F. Alber, McGraw-Hill, Inc. ("Alber")
"An Information System Based on Distributed Objects"	October 4, 1987	Michael Caplinger, Bell Communications Research ("Caplinger")
CompuServe Navigator User's Guide	January 1988	CompuServe ("CompuServe Navigator")
"Design and Implementation of An Electronic Special Interest Magazine"	August 29, 1986	Gitta B. Salomon, Massachusetts Institute of Technology ("Salomon")
The New Electronic Media "Videotex"	1987	W. Wayne Talarzyk, Lexington Books ("Talarzyk")
"Telesophy"	August 1985	Bruce R. Schatz ("Telesophy 1985")
"Telesophy: A System for Manipulating the Knowledge of A Community"	May 1987	Bruce R. Schatz ("Telesophy 1987")
"IBM, Sears shooting for '88 entry; New life for videotex"	April 6, 1987	Cleveland Horton, Advertising Age ("Trintex 1")
"Trintex Signs up 42 Advertising	June 1, 1987	Jerrold Ballinger, DM

Title	Date of Publication	Author/Publisher (short cite)
Clients; Is Hoping for Launch in Early '88, VP Says,"		News ("Trintex 2")
"Big advertisers link to videotext venture"	June 15, 1987	Cleveland Horton, Advertising Age ("Trintex 3")
"Trintex interactive videotext service will feature magazine-type format"	June 22, 1987	Arthur Markowitz, Discount Store News ("Trintex 4")
"Trintex to Aim On-Line Ads At Demographic Segments"	June 30, 1987	The American Banker ("Trintex 5")
"Inside Trintex; Technology & Operations supplement"	September 8, 1987	Women's Wear Daily ("Trintex 6")
"Trintex: Videotex Gets Personalized"	October 12, 1987	David Kiley, AdWeek ("Trintex 7")
"Trintex: Exclusive Status Report"	November 1986	Gary Arlen, Videotex Teletext News, No. 94 ("Trintex 8")
"NAPLPS: Beyond Videotex"	1985	John Vaughan ("Beyond Videotex")
"Interactive Architecture And The Role Of The Designer"	1984	John Vaughan, Videotex Proceedings 1984 ("Interactive Architecture")
"The Power of NAPLPS: Beyond Videotex"	1985	John Vaughan, Videotex International Proceedings 1985 ("Power of NAPLPS")
"The Communication Studio"	1985	Textup Documentation by John Vaughan ("TextUp")
"The Architecture of Videotex Systems"	1983	Jan Gecsei, Prentice-Hall Inc. ("Gecsei")
"Custom Communications from the Consumer Databanks"	September 1987	Mick O'Leary ("O'Leary")
"Multi-Media Information Services: A Laboratory Study"	June 1988	Judith H. Irven et al. ("Irven")
"Andrew: A Distributed Personal Computing Environment"	March 1986	James H. Morris et al. ("Morris")
"Menlo Corporation's Pro-Search: Review of a Software Search Aid"	January 1986	Barbara Quint ("Quint")

Title	Date of Publication	Author/Publisher (short cite)
"Foreshadowing Electronic Publishing Age: First Exposures to Viewtron"	December 1985	Tony Atwater et al. ("Atwater")
"Defining Constraints Graphically"	April 1986	Alan Borning ("Borning")
"DVI - A Digital Multimedia Technology"	July 1989	David G. Ripley ("Ripley")
"The Trillium User Design Environment"	April 11986	D. Austin, Jr. Henderson ("Trillium User")
"The Consul/CUE Interface: An Integrated Interactive Environment"	December 1983	Kaczmarek, T. et al. ("Kaczmarek")
"The Computer Sciences Electronic Magazine: Translating from Paper to Multimedia"	May 3, 1992	W. Randall Koons et al. ("Koons")
"KMS: A Distributed Hypermedia System for Managing Knowledge In Organizations"	November 1987	Robert Akscyn, et al. ("Akscyn")
"A Comparison Application Sharing Mechanisms Real-Time Desktop Conferencing Systems"	January 1990	S. R. Ahujaet al. ("Ahuja")
"Reflections on Notecards: Seven Issues for the Next Generation of Hypermedia Systems"	July 1988	Frank G. Halasz ("Halasz")
"A Tour Through Cedar"	January 1985	Warren Teitelman ("Teitelman")
"An Input-Output Model for Interactive Systems"	April 1986	Mary Shaw ("Shaw")
"Officeaid: An Integrated Document Management System"	January 1984	Allison Lee et al. ("Officeaid")
"The Visi On Operating Environment"	September 1983	William T. Coleman III et al. ("Coleman")
"An Experimental Multi-Media Bridging System"	1988	E.J. Addeo et al. ("Addeo")
"A Multiple, Virtual-Workspace Interface Support User Task Switching"	1987	Stuart K. Card et al. ("Card")
"gIBIS: A Hypertext Tool for Team Design Deliberation"	November 1987	Conklin, Jeff et al. ("Conklin")

Title	Date of Publication	Author/Publisher (short cite)
"A Control Panel Interface for Graphics and Image Processing Applications"	1987	Gene I. Fisher et al. ("Fisher")
"HDM: A Model for the Design of Hypertext Applications"	December 1991	Franca Garzotto et al. ("Garzotto")
"Enhancing the Usability of an Office Information System Through Direct Manipulation"	December 1983	Allison Lee et al. ("Office Information System")
"Domain Delphi: Retrieving Documents Online"	April 1986	Penny Orwick ("Orwick")
"Teletext and Videotex in the United States: Market Potential Technology Public Policy Issues"	1982	John Tydeman et al. ("Tydeman")
"New Package Rates"	July 7, 1987	Peter Helmer ("IBM-GROUPON10120808")
"Notes from Product Descriptor Meeting"	March 11, 1987	Trintex ("IBM-GROUPON10100828")
"Provider Agreements [Entered] "	July 20, 1987	Thomas Witt ("IBM-GROUPON10102751")
"Reception System Technical Review"	June 1986	Trintex ("IBM-GROUPON10102910")
"Trintex Announces First Advertisers"	May 22, 1987	Trintex ("IBM-GROUPON10100493")
"Client Dates"	January 16, 1987	Susan Pechman ("IBM-GROUPON10120750")
"Coldwell Banker Invitation"	March 31, 1987	Bruce E. Bellmare ("IBM-GROUPON10102967")
"Component Level Advertising Descriptor"	January 17, 1986	Steven J. Schimmed ("IBM-GROUPON10103874")
"Dollar Bank, High Level Design"	May 5, 1987	Trintex ("IBM-GROUPON10121898")
"Dreyfus Invitation"	May 13, 1987	Bruce E. Bellmare ("IBM-GROUPON10103255")
"Trintex Product Descriptor"	February 23, 1987	Henry Heilbrunn ("IBM-GROUPON10100766")
"Contract Procedures"	February 27, 1987	Peter Helmer ("IBM-GROUPON10100914")

Title	Date of Publication	Author/Publisher (short cite)
"Allstate Testing Letter"	May 8, 1987	Glenn Shapiro ("IBM-GROUPON10100910")
"Signed Provider Agreements"	July 8, 1987	Bruce W. Thurlby ("IBM-GROUPON10102738")
"System Architecture Overview"	February 24, 1986	A.M. Wolf ("IBM-GROUPON10120217")
"Visions Document"	April 10, 1987	Henry Heilbrunn ("IBM-GROUPON10120654")
"Viewtron: How to Use"	1983	AT&T ("Viewtron Video")
"Advertising on Videotex: What We've Learned"	1984	Martin Nisenholtz ("Nisen-holtz")
"The ITC Project: An Experiment in Large-Scale Distributed Personal Computing"	1984	M. Satyanarayanan ("ITC Project")

Prior Art Systems/Services

Item/Service
CompuServe Navigator
CompuServe Information Manager
TextUp
Telesophy
Trintex/Prodigy

U.S. Patent No. 5,961,601

Prior Art Patents and Patent Applications

Patent Number	Country of Origin	Date of Issue/Publication
US 6,275,821 (Danish)	US	Aug. 14, 2001 (Oct. 14,1994)
US 5,784,562 (Diener)	US	Jul. 21, 1998 (Oct. 10, 1995)
US 6,835,712 (DuFresne)	US	Nov. 10, 1998 (May 3, 1996)
US 5,717,860 (Graber '860)	US	Feb. 10, 1998

Patent Number	Country of Origin	Date of Issue/Publication
		(Sep. 20, 1995)
U.S. 5,708,780 (Levergood)	US	Jan. 13, 1998 (June 7, 1995)
US 5,745,681 (Levine)	US	Apr. 28, 1998 (Jan. 11, 1996)
US 6,230,202 (Lewine '202)	US	May 8, 2001 (May 1, 1995)
US 5,740,252 (Minor)	US	Apr. 14, 1998 (Oct. 13, 1995)
US 5,715,314 (Payne)	US	Feb. 3, 1998 (Oct. 24, 1994)
US 6,249,291 (Popp)	US	June 19, 2001 (Sep. 22, 1995)
US 6,141,666 (Tobin)	US	Oct. 31, 2000 (Jan. 22, 1996)
U.S. 6,016,484 (Williams)	US	Jan. 18, 2000 (Apr. 26, 1996)
US 5,712,979 (Graber '979)	US	Jan. 27, 1998 (Sept. 20, 1995)
US 5,740,430 (Rosenberg)	US	Apr. 14, 1998 (Nov. 6, 1995)
US 5,752,022 (Chiu)	US	May 12, 1998 (Aug. 7, 1995)
US 5,768,581 (Cochran)	US	June 16, 1998 (May 7, 1996)
US 5,784,565 (Lewine '565)	US	July 21, 1998 (Feb. 5, 1997)
US 6,092,199A (Dutcher)	US	July 18, 2000 (July 7, 1997)

Prior Art Publications

Title	Date of Publication	Author/Publisher (short cite)
"Collaborative Ontology Construction for Information Integration"	1995	Adam Farquhar, Richard Fikes ("Farquhar")
"World-wide algorithm animation"	1994	Bertrand Ibrahim, Computer Networks and ISDN Systems, 27, (1994), pp. 255-265. ("Ibrahim")

Title	Date of Publication	Author/Publisher (short cite)
"Translation Servers: Gateways Between Stateless and Stateful Information Systems"	1994	Louis Perrochon, Network Services Conference. 1994 ("Perrochon")
"Organizational Management System in an Heterogeneous Environment – A WWW Case Study"	January 31, 1995	Alberto Rodrigues Da Silva, Jose Borbinha, The International Federation for Information Processing ("Da Silva")
"The World Wide Web and Emerging Internet Resource Discovery Standards for Scholarly Literature"	Spring 1995	Stuart Weibel, Library Trends, Vol. 43, No. 4 ("Weibel Library Trends")
"An architecture for Scholarly Publishing on the World Wide Web"	1995	Stuart Weibel et al., Computer Networks and ISDN Systems 28 ("Weibel Architecture")
"Web*-A Technology to Make Information Available on the Web"	April 1995	Almasi et. al, Proceedings of the Fourth Workshop on Enabling Technologies: Infrastructure for Collaborative Enterprises ("Almasi")
"DynaWeb: Interfacing large SGML repositories and the WWW"	December 12, 1995	Gavin Thomas Nicol ("Nicol")
"The Age of the Customized Web Site"	December 1996	Hayato Yoshida ("Yoshida")
"Techniques for Server-Side Dynamic Generation"	September 1994	Thomas Boutell et al. ("Boutell")
"The Zweb W3 Gateway"	July 1995	Eric P. Kasten et al. ("Kasten")
"Using the Web to Provide Private Information -or- Password Protection Without Modifying Clients"	May 1994	Bjorn N. Freeman-Benson ("Freeman-Benson")
"Interactive Information Services Using World-Wide Web Hypertext"	April 20, 1994	Steve Putz ("Putz")
"WWW Talk Mailing List"	January 1995	Robert S. Thau et al. ("WWW-Talk")
"From User Access Patterns to Dynamic Hypertext Linking"	February 5, 1996	Tak Woon Yan et al. ("Yan")

Title	Date of Publication	Author/Publisher (short cite)
HTML and CGI Unleashed	1995	John December et al., Sams.net publishing ("Unleashed")
HTML and CGI Unleashed (Contents of CD)	1995	John December et al., Sams.net publishing ("Unleashed CD")
"Spinning the Web: A Guide to Serving Information on the World Wide Web"	February 1996	Yuval Fisher ("Spinning the Web")

Prior Art Systems/Services

Item/Service
Online Computer Library Center (OCLC) Electronic Journals Online WWW Gateway ("OCLC Gateway")
West Virginia University Concurrent Engineering Research Center WebStar System ("Webstar")
Amazon.com Website available in 1995 ("Amazon 1995 Website")

U.S. Patent No. 7,631,346

Prior Art Patents and Patent Applications

Patent Number	Country of Origin	Date of Issue/ Publication
US 6,115,040 ("Bladow")	US	Sept. 5, 2000 Sept. 24, 1998)
US 7,877,492 ("Chawla '492")	US	Jan. 25, 2011 (Feb. 26, 2004)
US 6,826,696 ("Chawla '696")	US	Nov. 30, 2004 (July 26, 2000)
EP 1 089 516 ("Doshi")	EPO	Apr. 4, 2001 (Sept. 20, 2000)
US 6,092,199 ("Dutcher")	US	July 18, 2000 (July 7,1997)
US 7,137,006 ("Grandcolas")	US	Nov. 14, 2006 (Sept. 22,2000)

Patent Number	Country of Origin	Date of Issue/ Publication
US 7,610,617 ("Kelly")	US	Oct. 27, 2009 (Dec. 22,2004)
US 5,708,780 ("Levergood")	US	Jan. 13, 1998 (Jun. 7,1995)
US 7,680,819 ("Mellmer")	US	Mar. 16, 2010 (Sep. 27,2000)
US 6,959,336 ("Moreh")	US	Oct. 25, 2005 (April 7,2001)
US 6,421,768 ("Purpura")	US	July 16, 2002 (May 4,1999)
2004-302907 ("Sunada")	Japan	Oct. 28, 2004 (Mar. 31, 2003)
US 2004/0205176 ("Ting")	US	Oct. 14, 2004 (Mar. 21, 2003)
US 2002/0156905 ("Weissman")	US	Oct. 24, 2002 (Feb. 21,2001)
US 2003/0149781 ("Yared")	US	Aug. 7, 2003 (Dec. 3, 2002)
US 5,550,981A ("Bauer")	US	Aug. 27, 1996 (June 21, 1994)
WO 02/13,114A1 ("Sullivan")	US	Feb. 14, 2002 (July 27, 2001)

Prior Art Publications

Title	Date of Publication	Author/Publisher (short cite)
"Federated Identity Manage-ment: Managed Beta Program"	2003	IBM ("FIM")
"Give Me Liberty . . . "	June 1, 2003	Jeffrey Harris ("Harris")
"Shibboleth-Architecture DRAFT v05"	May 2, 2002	Marlena Erdos ("Erdos")
"Novell Debuts New digitalme 'In- the-Net' Service"	October 5, 1999	Novell, Inc. ("In the Net")
"The Human Face of NDS"	August 1, 1999	Carrie Oakes ("Oakes")
"Dynamic Creation and Manage-ment of Runtime Environments in the Grid"	September 6, 2003	Kate Keahey, et al. ("Dy-namic Creation")

Title	Date of Publication	Author/Publisher (short cite)
"From Sandbox to Playground"	November 8, 2004	Kate Keahey et al. ("Sandbox")
"Virtual Organisations in Computer Grids and Identity Management"	January-March 2004	Demchenko, Yuri ("Demchenko")
"Walden: A Scalable Solution for Grid Account Management"	November 8, 2004	B Kirschner et al. ("Kirschner")
"The PRIMA Grid Authorization System"	March 18, 2005	Markus Lorch et al. ("PRIMA")
"Privilege Management and Authorization in Grid Computing Environments"	April 16, 2004	Markus Lorch ("Privilege Management")
"Access Control Based on Attribute Certificates for Medical Intranet Applications"	March 17, 2001	Ioannis Mavridis et al. ("Mavridis")
"Ping Identity Corp. Document SID2-5"	July 21, 2004	Ping Identity Corp. ("Ping Identity")
"An Online Credential Repository for the Grid: MyProxy"	August 7, 2001	Jeff Novotny et al. ("Novotny")
"Liberty ID-FF Architecture Overview"	Undated	Thomas Wason et al eds. ("Liberty Alliance Specification")
"Liberty ID-FF Bindings and 962 Profiles Specification, version 1.2-errata-v2.0"	September 12, 2004	Scott Cantor et al. eds. ("Bindings and Profiles")
"Liberty ID-FF Protocols and Schema Specification, version 965 1.2-errata-v3.0"	December 14, 2004	Scott Cantor et al. eds. ("Protocols and Schema")
"Liberty ID-FF Authentication Context Specification, version 1.3"	December 14, 2004	Paul Madsen ed. ("Madsen")
"Liberty Metadata Description and Discovery Specification, version 1.1"	December 14, 2004	Peter Davis ed. ("Davis")
"Liberty Technical Glossary, version 1.4"	December 14, 2004	Jeff Hodges ed. ("Hodges")

Title	Date of Publication	Author/Publisher (short cite)
"Liberty ID-FF Implementation Guidelines, version 1.2"	April 18, 2004	Peter Thompson et al eds. ("Thompson")
"Bindings and Profiles for the OA-SIS Security Assertion Markup Language (SAML), version 1.1, OASIS Standard"	September 2, 2003	Eve Maler et al. eds. ("Maler")
"Uniform Resource Locators (URL), RFC 1738"	December 1994	T. Berners-Lee et al. ("RFC 1738")
"Key words for use in RFCs to In-dicate Requirement Levels, RFC 2119"	March 1997	S. Bradner ("RFC 2119")
"HTTP State Management Mecha-nism, RFC 2965"	October 2000	D. Kristol et al. ("RFC 2965")
"Hypertext Transfer Protocol – HTTP/1.1, RFC 2616"	June 1999	R. Fielding et al. ("RFC 2616")
"Uniform Resource Identifiers (URI): Generic Syntax, RFC 2396"	August 1998	T. Berners-Lee et al. ("RFC 2396")
"Simple Object Access Protocol (SOAP) 1.1"	May 8, 2000	Don Box et al. ("Box")
HTML and CGI Unleashed	1995	John December et al., Sams.net publishing ("Un-leashed")
HTML and CGI Unleashed (Contents of CD)	1995	John December et al., Sams.net publishing ("Un-leashed CD")
"Privacy and Security Best Prac-tices, version 2.0"	November 12, 2003	Christine Varney ed. ("Pri-vacy and Security")
"Privacy in Browser-Based At-tribute Exchange"	November 21, 2002	Birgit Pfitzmann ("Pfitz-mann")

Prior Art Systems/Services

Item/Service
Novell DigitalMe ("DigitalMe")

Each patent-in-suit simply arranges old elements known in the computer field, with each performing the same function it had been known to perform, and yields no more than what one would expect from such an arrangement—the combination is obvious. As apparently interpreted by IBM in its Infringement Contentions, the '967 patent applies generically to any user interface constructed from optionally cached data and the related '849 patent applies generically to any user interface constructed from optionally cached data where a portion of the user interface displays advertising. The above-identified prior art references use those familiar elements for their primary or well-known purposes in a manner well within the ordinary level of skill in the art. The '601 patent is directed to a well-understood solution to a well-known problem—maintaining state information in a stateless protocol, particularly HTTP, by embedding state information or information sufficient to identify state in hyperlinks for future requests to the server in communication with a browser. Both the problem and the specific solutions claimed by the '601 patent were well understood before its invention. The '346 patent is directed to well-known solutions to the problem of reducing user burdens by offering a single sign-on service to interact with various protected resources on a network. This was a well-developed technological field by the time of the invention of the '346 patent.

The above-identified prior art references address the same or similar technical issues and suggest the same or similar solutions to those issues as the patents-in-suit. Accordingly, common sense and the knowledge of the prior art, along with its disclosure, render the asserted claims of the patents-in-suit invalid under Section 102 and/or Section 103.

Indeed, methods for creating partitioned user interfaces with menu bars and/or advertising were well known in the art before the '967 patent, as was constructing user interface elements from defined data structures that could be cached and switching between applications. For example, the

CompuServe Navigator system was a prior art application that served as the user interface to the CompuServe Information Service. The Xerox Star user interface, well known as a groundbreaking advance in user interfaces—and prior art to the '967 patent—allowed users to switch between applications. Many of the claim limitations of the '967 patent claim basic concepts that were inherent in those and other technologies. The '849 patent adds little to this notion—merely reciting well-known limitations related to display and caching of advertising data, as well as identifying advertising targets by demographic or location. Indeed, much of this information is admitted as prior art. (*See* '849 patent at 2:20-30 (discussing the "conventional manner" of supplying advertising "from a host to a user site"), 10:23-27 (referencing "conventional marketing analysis techniques" for establishing "the user characterizations")).

Methods for maintaining state information by embedding it in hyperlinks, as disclosed in the '601 patent, were also well known and used. For example, U.S. Patent 5,717,860 to Graber et al. discloses a method and apparatus for tracking the navigation path of a user that has been directed to a second site on the World Wide Web from a first site by maintaining navigation history in URLs. And the publication *HTML & CGI Unleashed* was a textbook that described, among other things, maintaining state information as part of the HTTP protocol. Among the many disclosed methods for maintaining state in this reference, one is through the use of state information embedded in URL data, including via use of a CGI query string. The reference also includes sample computer source code that performs the functions of the '601 patent, particularly as interpreted by IBM in its Final Infringement Contentions.

The single-sign-on functionality of the '346 patent was also well known and used before the purported invention. For example, U.S. Patent No. 7,680,819 to Mellmer describes a system for managing digital identity information and the use of an "Autologin service," which "logs a user

in with the appropriate credentials when a user browses a web site that requests a username and password." As a further example, Japanese Patent Application Publication No. 2004-302907 to Sunada discloses a system that can automatically generate user account information based on information at a single-sign-on server. IBM itself participated in an industry standards process for single sign-on functionality—the Liberty Alliance Project. Technical specifications published as part of that project describe the purportedly novel aspects of the '346 patent. Further, federated computing environments were well known at the time of the '346 patent and described, for example, in Doshi, Grandcolas, Harris, Moreh, Weissman, and Yared.

Creation of a user account as part of a single sign-on process was also obvious at the time of the '346 patent. Not only were single sign-on solutions well known (*see e.g.*, Pfitzmann), but it was also well known that some services were available only to users with a user account (*see e.g.*, '346 patent at 1:28-30). It was also well known that a user account could be created on the fly. For example, Sunada discloses that "[i]f there is no user account, it obtains information regarding the user from the SSO server 1, uses attribute association information in the attribution association database 24 to automatically generate user account information, and registers it in the user account information database 23." A person of ordinary skill in the art would have found it obvious to add an on-the-fly account creation step to known single sign-on solutions because it would have been applying a known technique to a known method to yield predictable results. Indeed, adding on-the-fly account creation functionality to the well-known single sign-on systems would have predictably added the convenience of an automatically-created account without imposing additional steps or requirements on the user. Furthermore, users would have "expect[ed] that computer systems coordinate their actions so that burdens on the user are reduced." ('346 patent at 1:25-27). Any creation of an account on the fly would predictably reduce the burden on

the user and permit the user to access certain resources that are only accessible to those with an account. Such automation of the account creation process is exactly the type of coordination between computer systems that users would have expected.

It would have also been obvious before the '346 patent to commence creation of a user account prior to retrieving user attribute information for the user as part of the single sign-on operation. For example, Sunada discloses "[i]n a case where S35 determines that the user account does not exist, S36 inquires of the SSO server 1 for remote attribute information in the attribute association information which is housed in an attribute association database 24, like the one shown in Figure 2 for instance, and obtains the information." (Sunada at 31.) Similarly, Pfitzmann discloses multiple requests and responses for attributes, which would have yielded the predictable result of supplying additional information if it is determined that additional information is necessary. It would also have been obvious before the '346 patent to complete creation of the user account after retrieving user attribute information as part of the single sign-on operation. For example, Sunada discloses "[u]pon putting together information necessary for creating the user account in this manner, S39 creates the user account information and registers it with the user account information database 23. With this, in a case where the access state is that of being logged in, the user account information now exists." (Sunada at 35.) Adding such a concluding user account creation operation would allow the account to be created on the fly, which in turn would provide the predictable result of increasing the convenience for the user.

In *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious because a court "can take account of the inferences and creative steps that a person of ordinary skill in the

art would employ." *Id*. at 418. The Supreme Court rejected the Federal Circuit's prior rigid approach requiring "precise teachings directed to the specific subject matter of the challenged claim," and held instead that the obviousness analysis requires consideration of "ordinary skill and common sense." *Id*. at 418, 421. As the Court explained, "[i]t is common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 402. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art . . . ." *Id*. at 418. The Supreme Court also rejected the view that the prior art references that are combined must address the same problem as the patented invention, stating that "any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide reason for combining the elements . . . ." *Id*.

The references listed above, alone or in combination, contain an explicit and/or implicit teaching, suggestion, motivation, or inference to combine them due to the following: (1) the knowledge generally available to a person of ordinary skill in the art, (2) the prior art references as understood by a person of ordinary skill in the art, (3) the nature of the problem to be solved, (4) the fact that each prior art reference addresses similar problems, (5) the knowledge of those skilled in the art that the disclosed components had been or could be used to implement various features.

1. The '967 Patent

The references related to the '967 patent all deal with the same technological field: they are related to the construction of user interfaces in a multiple application environment in which the user interface is constructed from data objects that may be stored locally. The references also

address issues related to caching and switching between applications. *See, e.g.*, *Caching Hints in Distributed Systems* by Douglas B. Terry; *An Information System Based on Distributed Objects* by Michael Caplinger ("Caplinger"); U.S. Patent No. 4,962,475 ("Hernandez").

Many of the references for the '967 patent and the related '849 patent discussed below refer to one another or otherwise contain reasons that a person of ordinary skill in the art would combine them. For example, many of the references use similar language (i.e., "data objects," "user interface") to describe the construction and use of interfaces for applications. The references themselves discuss the benefits of applying their disclosures to existing prior art interactive computer systems, including networks, videotext, and so on. Because such similarities, *inter alia*, indicate that these references are all directed to the same or a similar technological field, a person of ordinary skill in the art would naturally be aware of and combine these similar and well-known teachings of the references.

Groupon provides the following non-exclusive examples of motivations to combine the various references identified herein.

Morris in view of Satyanarayanan (ITC System). Morris reports the work of the Information Technology Center ("ITC"), which was a collaborative effort between IBM and Carnegie-Mellon University ("CMU"'), on the "Andrew" project, also referred to as the "ITC Project." Satyanarayanan similarly describes the "collaborative effort between [IBM] and [CMU] in . . . designing and implementing . . . one of the largest distributed computing systems yet attempted." Satyanarayanan at Abstract. Satyanarayanan thus provides further description of the ITC Project's subject matter and public use. Accordingly, a person of ordinary skill in the art would be motivated to combine Morris' and Satyanarayanan's descriptions of the ITC System.

Morris (and ITC System) view of Xerox Star (and Smith). Morris provides explicit motivation to combine the user interface concepts of Xerox Star with the disclosure of Morris. For example, Morris states that the Window Manager of the Andrew user interface is "based partly on the Xerox Star [25]," where that reference "[25]" is a citation to "The star user interface: an overview" by David Canfield Smith ("Smith") describing the Xerox Star system. Morris at 195, 201. Additionally, Morris states that "[t]he Xerox Alto System [11] has been a powerful inspiration for our system." *Id.* at 184. Specifically, Morris identifies the Xerox Alto's "raster graphics" concept, where "[s]mall graphical icons were used to symbolize actions or states, and mouse movements and button clicks rather than key strokes were used to communicate with the machine," as a "key component" serving as a "technical forerunner[] of Andrew." *Id.* at 184-85. Smith explains that Xerox's Alto "served as a valuable prototype for Star" and shares "several aspects" of the Star architecture, including raster graphics and reliance on selection of graphics images. Smith at 517-18, 527. Thus, a POSA would understand Morris' reference to this "key component," i.e., a GUI based on a raster graphics display, in Xerox Alto would apply equally to adopting that component from Xerox Star. Accordingly, a POSA would be motivated to apply the user interface disclosure in Xerox Star to Morris based on Morris' explicit statements and would have been an application of a known technique in accordance with its established function to achieve the same result. Moreover, as Morris discloses the ITC system, a POSA would be motivated to combine ITC Project and Xerox Star for the same reasons discussed for Morris and Xerox Star.

HyperCard in view of Rose. It would have been obvious to a person of ordinary skill in the art to combine the publications and documents describing HyperCard with Rose because both describe common subject matter, namely operation of the Macintosh OS, including use of "resources." *Compare* Goodman at 168 ("Art for an icon is stored in a part of the stack file, the Home

stack file, or in the HyperCard application file itself. This special part of the file is called the Resource Fork.") *with* Rose at 1-103 ("Macintosh applications make use of many resources, such as menus, fonts, and icons, which are stored in resource files. For example, an icon resides in a resource file as a 32-by-32 bit image"). Accordingly, a person of ordinary skill in the art would have been motivated to apply the additional details of the file format of resource files of Rose to the same subject matter disclosed in Goodman and other publications describing the HyperCard system.

HyperCard in view of Terry. It would have been obvious to a person of ordinary skill in the art to combine the publications and documents describing HyperCard with Terry in order to apply the local caching of a network file system management disclosure of Terry to the retrieval of HyperCard Stacks stored on a network drive. Specifically, Goodman explicitly discloses retrieving HyperCard resources from a network drive: "HyperCard will become the familiar 'front end' to information access not only on our own disk drives, but in network file servers." Goodman at 12. Terry explains that by 1987, "[c]aching [had] become a common technique for reducing the cost of accessing data in a distributed system," and explains that "distributed systems" includes all types of servers, including "file servers." Terry at 48. That is, Goodman explicitly discloses storing HyperCard files on network file servers, and Terry explicitly discloses using the "common" caching techniques for caching files on network file servers. Thus, Terry explicitly discloses applying the network file system management disclosure of Terry, including local cache management, to HyperCard. Moreover, Terry discloses an advantage of employing caching: "By maintaining local caches of recently-acquired data, programs can amortize the high cost of querying remote data storage servers over several references to the same information." Terry at 48. Accordingly, a person of ordinary skill in the art would have been motivated to apply the network file

system management disclosure of Terry, including local cache management, to HyperCard in order to obtain this benefit.

Further, one of the specific systems Terry discusses is the "ITC distributed file system." Terry at 49. Morris discloses an implementation of the ITC distributed file system using customized Sun workstations named "VIRTUE." Morris at 186. In addition to that embodiment, Morris explicitly suggests "[s]upporting non-VIRTUE workstations, especially IBM PCs and Apple Macintoshes," the latter of which runs HyperCard. *Id* at 199. Accordingly, Morris provides another example of an explicit suggestion in the prior art suggesting to a POSA to apply network file system management, including local cache management, to Macintosh systems such as Goodman. *Id.* Thus, a POSA would have been motivated to apply the network file system management disclosure of Terry, including local cache management, to the disclosure of using a network file system in Goodman based, at least, (1) on the explicit disclosure in Terry, (2) on the explicit disclosure in Morris, and (3) in order to obtain the advantages of caching as disclosed in Terry. Indeed, doing so is also an application of a known technique in accordance with its established function to achieve the same result.

The Trintex Articles. A person of ordinary skill in the art would be motivated to combine the publications and documents describing Trintex because they all explicitly describe the same system and thus their combination achieve the functionality and feature set described applicable to that system.

2. The '849 Patent

As with the '967 patent, the references related to the '849 patent all deal with the same technological field: they are related to the construction of user interfaces in a multiple application environment in which the user interface is constructed from data objects that may be locally stored

and in which advertising information is stored and displayed to users. For example, *Videotex/Teletext: Principles & Practices* by Antone F. Alber describes the state of the art for videotex and teletext systems, the foundational technologies of both the '967 and '849 patents, as they existed in 1985. Alber describes the use of videotext for targeted advertising and the use of the NAPLPS protocol to construct user interfaces.

Groupon provides the following non-exclusive examples of motivations to combine the various references identified herein.

The Trintex Articles. A person of ordinary skill in the art would be motivated to combine the publications and documents describing Trintex because they all explicitly describe the same system and thus their combination achieve the functionality and feature set described applicable to that system.

Trintex in view of Simon and Alber. A person of ordinary skill in the art would have reason to combine the publications and documents describing Trintex with Simon and/or Alber because they are all directed to videotex systems and specifically to advertising on videotex systems. For example, Trintex 5 explains that advertisements on the Trintex system "are displayed as subscribers view editorial sections," which requires that a portion of the screen is used to display applications and another portion is used to display advertisements. (Trintex 5 at 1.) Alber discloses an example of such a display. (Alber at Plate 1-1.) And, Simon discloses that videotex pages, including advertising pages, may be sent at any time or automatically stored on the reception system so that they may be subsequently displayed to users. (Simon at 1:37-38.) It would have been obvious to combine the selective storing of advertising on a user's computer, as disclosed by Simon, with the targeted advertising of Trintex 5 because it would have been combining prior art

elements according to known methods to yield predictable results. And, as the examiner during prosecution of the '849 patent stated:

> A person of ordinary skill in the art, given the teachings of Simon et al., would recognize that advertising is changed because some advertisements become untimely, some advertisers may wish to discontinue advertising with the videotex system, discount offers change, etc. When advertisements are removed, the store becomes depletion [sic]. [I]t would have been obvious to replenish the store of advertisements when the store falls below a predetermined level. An example of a predetermined level, as broadly recited, is one.

(Nov. 19, 1998, Examiner's Answer, App. No. 08/158,025, at 22.) That is, a person of ordinary skill in the art would recognize the benefits of locally storing pages and advertisements as disclosed in Simon. By storing advertisements as disclosed by Simon, a person of ordinary skill in the art would recognize that updated advertisements could be readily available for display to the user.

While a preferred embodiment of Simon relates to "offline" display, Simon explains that videotex pages can be sent at any time, i.e., in both online and offline modes. (Simon at 2:48-52.) A person of ordinary skill in the art reading Simon would understand that if a videotex system is capable of displaying applications and advertisements in an offline mode, it could also display the advertisements while in an online mode as disclosed in Trintex 5. Furthermore, the BPAI explicitly recognized the possibility that Simon could be combined with a videotex system, such as that disclosed by Trintex 5. (*See* Feb. 27, 2002 Decision on Appeal, App. No. 08/158,025 ("BPAI1"), at 22.)

Furthermore, a person of ordinary skill in the art would have been motivated to apply Alber's use of characterizations for targeting advertising with other videotex systems, such as Trintex 5, because doing so would enable specific groups of consumers to be targeted. Dec. 23, 2005, Decision on Appeal, App. No. 08/158,025 ("BPAI2"), at 59 ("One skilled in the advertising and videotex art would have been motivated to establish characterizations (user profiles) based on

compiled data which includes, in part, applications previously requested by the users for the stated reason that 'it enables specific groups of consumers to be targeted.'").

Trintex in view of Simon and Wilson. A person of ordinary skill in the art would have been motivated to combine the concept of an "order point" taught by Wilson with the local storage of advertisements taught by Simon because it would have predictably improved the performance of a videotex system that caches advertisements. Simon discloses that videotex pages are stored locally in non-volatile memory or RAM and "have to be updated from time to time, e.g., when the advertising is changed" by downloading them from the central computer. (Simon at 1:37-38.) Although Simon does not provide detail as to exactly when the local store of advertisements needs to be updated, it would have been obvious to a person of ordinary skill in the art to replenish the store of advertisements when the number of current (i.e., not out-of-date) cached advertisements fell below a predetermined level (i.e., an "order point"). By maintaining an "adequate inventory" of advertising objects, a person of ordinary skill in the art would predictably improve the performance of the system by ensuring that the local cache contains an adequate number of current advertising that can be displayed without delay.

Salomon in view of Alber. It would have been obvious to a person of ordinary skill in the art to combine the teachings of Salomon and Alber because, as an initial matter, Alber is explicitly cited by Salomon (*see* Salomon at 81), so a person of ordinary skill in the art would have had a reason to consider the teachings of Alber in connection with Salomon to obtain additional implementation details regarding interactive electronic publishing. Second, both Salomon and Alber relate to the same field of endeavor-electronic publishing. (*See* Salomon at Abstract ("Electronic publishing has been established as a unique means for providing information in an interactive and

personalized manner."); Alber at 5 ("Information retrieval or electronic publishing, as it is sometimes called, may take several forms.").) Third, a person of ordinary skill in the art would have been motivated to apply Salomon's teachings of storing content, including advertising content, on a user's local computer and using local software for manipulating that content for the reasons stated in Alber. Namely, as Alber teaches and as discussed below, doing so would have improved the performance of the system and minimized the amount of information transferred over the network.

Alber discloses that "[t]here are two ways in which computational support is provided in public systems." (Alber at 24.) One is upstream computing, in which user-entered data is processed by software located on the main computer, and the other is downstream computing, where a user's computer executes "telesoftware" downloaded from the main computer. (*Id.*) Alber explains that downstream computing "provides a computer capability far beyond that of a standalone personal computer" and that the "applications made possible by telesoftware and [] interactive [] videotex are endless." (Alber at 24.) A person of ordinary skill in the art would recognize that using downstream computing (i.e. software running on a user's computer) like the EMAG application disclosed in Salomon would take advantage of the user's computer's local data storage and processing power.

Alber further discloses that "[t]here are several advantages inherent in downstream computing." (Alber at 25.) First, it can "save the subscriber money by reducing the total connect time" because "[t]here is little or no back-and-forth interchange with the computer system after the initial one." (*Id.* at 25.) "Second, it can speed up the system responsiveness, since there is no time spent transferring information back and forth or vying with other users for computer resources at the head end of the system." (*Id.*) A person of ordinary skill in the art would have been motivated to

store advertising data or objects selected for display using downstream software, as disclosed by Salomon, in a videotex system that presents users with interactive applications because, once the content (e.g., advertisement) had been downloaded to the user's computer, there would be little or no back and forth interchange with the computer system, which would save the subscriber money. In addition, it would speed up the system responsiveness because once the advertisement was stored locally, there would be no time spent transferring information back and forth or vying with other users for computer resources at the head end of the system.

In addition, combining the teachings of Salomon with those of Alber would have yielded predictable results. Specifically, selectively storing advertising objects on a user's computer (e.g., claim 1) or storing a predetermined amount of advertising data in a store at the user's computer (e.g., claim 8), and using software running on the user's computer to select what advertising is presented to users, would have had the predictable result of reducing the back and forth interchange with the central computer system after the initial one, and it would have sped up the responsiveness of the system.

3. The '601 Patent

The references related to the '601 patent also all deal with the same technological field: maintenance of state information in networked environments that communicate using stateless protocols. These references also address issues related to resuming "conversations" using stored state information. For example, U.S. Patent No. 5,784,562 to Diener et al. describes an electronic document processing system in which a network communication connection between a server and client must be repeatedly re-established and the prior dialog session context re-associated with continued dialog session communications. The HTML & CGI Unleashed reference discloses the use of a CGI program to modify identified hyperlinks to include state information. Indeed, many of the prior art references provide a teaching or motivation to combine them to arrive at the alleged

inventions claimed in the patents-in-suit. For example, the references describe both the same problem and similar solutions, and in many instances the same stateless protocol, HTTP. Such similarities indicate these references are all directed to the same or a similar technological field and a person of ordinary skill in the art would naturally be aware of and combine these similar and well-known teachings of the references.

Groupon provides the following non-exclusive examples of motivations to combine the various references identified herein.

Unleashed in view of Danish. Danish presents a specific example of the benefits of extending a client based application to the Internet, and Unleashed is both intended to and teaches how to apply known software programming language like CGI and Java in extending application and commerce related activities to the Internet. Based on the intended purpose of Unleashed of educating developers about improved programming languages and techniques, they would naturally consult and apply the teachings of Unleashed as part of developing web services that required state preservation.

Furthermore, both Unleashed and Danish discuss examples of catalog searching and therefore are related by both subject matter and area of work, and a developer would naturally consider the teaching of each in addressing the application of known coding techniques to preserve state and implement the related searching. For example, Unleashed specifically presents component product related searches, as does Danish, and a person of ordinary skill in the art would be motivated to apply existing and alternative search techniques like the parametric component searching disclosed in Danish to the component searching disclosed in Unleashed as part of developing a system that provided further ease of use and additional functionality to an end user that addressed

issues presented in each reference. Similarly, Danish discusses the need to preserve state information and one exemplary solution for same, and Unleashed details additional state preservation techniques that could be applied with software languages that a person of ordinary skill in the art was increasingly interested in applying, such as CGI and Java, and the benefits of applying such languages and disclosed techniques.

In addition, Danish explains that "[t]he widespread use of computers and electronic searching has attracted the attention of large manufacturers offering a vast array of products in an increasingly competitive environment. In an effort to offer product that closely matches customer needs, manufacturers proliferate product and product feature alternatives. This proliferation of product offerings provides the customer with more options from which to choose, however, it also increases the difficulty of finding the one product offering that best addresses a specific customer's needs." (Danish at 1:30-33.) Danish further explains that "[d]ifferent customers have different preferences, and in many cases a customer is somewhat flexible concerning the product to buy as long as the customer is informed as to how the selection of one alternative affects the availability of another alternative. In addition, one customer may want a red car and accept manual transmission, while another customer must have automatic transmission and color is unimportant. Accordingly, there is a need for a search method that provides information interactively as to how certain alternative selections affect the number of remaining alternatives and/or matching items and allows a user to modify selection priorities during the course of the search." (Danish at 3:6-17.) Because developers naturally want their search offerings to be friendly and easy to use, this teaching would motivate a person of ordinary skill in the art to apply the search techniques of Danish in combination with the product searches of Unleashed to provide consumers more efficient ways to identify products that are both of interest and not of interest, such as improving the exemplary searches

presented in Unleashed.

Moreover, Danish presents an Internet embodiment of parametric searching, and identifies the need to preserve state and a specific example of how to preserve that state. And, Danish teaches that there are certain restrictions on building an interactive screen with then-current Internet capabilities. (*See* Danish at 18:35-39.) A person of ordinary skill in the art would have been motivated to apply the teachings of Unleashed to overcome those restrictions. Unleashed presents multiple additional ways to preserve state information, including detailed coding examples for preserving such state information. As Unleashed is a reference intended to reach its audience about the application of CGI techniques, including preserving state in a stateless conversation, and a person of ordinary skill in the art would be motivated to consult and apply the teachings in Unleashed as part of the development of catalog searching as detailed in Unleased and the catalog parametric searching discussed in Danish. Indeed, the intent of Unleashed was to educate developers about the benefits of applying its disclosed techniques in developing web pages and services. Danish presents a web development process, web implementation and tools, scripting techniques, and sample code to explain how certain features, such as state preservation, can be implemented. For example, Unleashed explains that the "clever developer can overcome the statelessness of HTTP by including data in the gateway programs response that the client can then make use of to issue a new request," and presents techniques for same. (*See* Unleashed at 519; *see also* pp. xxii-xxiii ("Part IV of this book is a complete guide to all aspects of gateway programming, the key to providing interactive services on the Web. Starting off with the basic principles and fundamentals, this part presents many self-contained case studies in such areas as libraries, databases, text search and retrieval, and interactive applications. This part also reviews issues of gateway programming transactions and security as well as special topics and language options for gateway programming.").)

In addition to the forgoing, to the extent Unleashed does not anticipate claims 9 or 58, it would have been obvious to a person of ordinary skill in the art to combine the concept of filtering hyperlinks or data according to predetermined criteria, as disclosed in Danish, with Unleashed because it was a known method for removing data or hyperlinks before a webpage is displayed for each of the reasons discussed above. Further, to the extent Unleashed does not anticipate claims 10 or 59, it would have been obvious to a person of ordinary skill in the art to combine the concept of addition hyperlinks or data according to predetermined criteria, as disclosed in Danish, with Unleashed for each of the reasons discussed above.

Unleashed in view of Williams. To the extent Unleashed does not anticipate claim 4, it would have been obvious to a person of ordinary skill in the art to combine the concept of dynamically downloading code to the client to perform the step of embedding because Unleashed explains the power and reasoning for using Java when developing web-based services and Williams further explains that "Java supports the notion of client-side validation, offloading appropriate processing onto the client for improved performance. Dynamic, real-time Web pages can be created. Using the above-mentioned custom UI components, dynamic Web pages can also be created." (Williams at 10:3-5.) Thus, Williams teaches the benefit of applying Java to improve performance by having clients execute functionality such as the state preservation techniques of Unleashed. Therefore, a person of ordinary skill in the art would have been motivated to move the embedding functionality to the client to improve the performance, and reduce the computational burden on the server by offloading processing from the server to the client.

Graber in view of Danish. Graber describes on-line computer services such as, for example, on-line information retrieval services, on-line travel reservation services, or on-line stock trading services, receive new subscribers from various sources. Similarly, Danish relates to on-line

informational retrieval services, namely searching for and obtaining product information. Both references discuss the need to preserve state information in the context of these ecommerce applications, and both references teach examples of how to preserve state information. Given that both references are focused on similar problems in the same field or at a minimum closely related fields and present alternative solutions, one of ordinary skill would naturally apply the teachings of each reference in developing ecommerce applications described by the references.

Furthermore, Graber identifies on-line information systems as an example of where its teachings may be applied. Graber does not, however, disclose the details of user interfaces, such as determining what links to include on a webpage depending on a user's selections, that would need to be de developed in connection with the on-line information system. Danish provides detailed examples of the on-line information retrieval systems to which Graber refers. As such, a person of ordinary skill in the art would be motivated to combine the teachings of these references.

In addition, in the context of on-line information retrieval, Danish explains that "[t]he widespread use of computers and electronic searching has attracted the attention of large manufacturers offering a vast array of products in an increasingly competitive environment. In an effort to offer product that closely matches customer needs, manufacturers proliferate product and product feature alternatives. This proliferation of product offerings provides the customer with more options from which to choose, however, it also increases the difficulty of finding the one product offering that best addresses a specific customer's needs." (*See* Danish at 1:30-39.) Danish further explains that "[d]ifferent customers have different preferences, and in many cases a customer is somewhat flexible concerning the product to buy as long as the customer is informed as to how the selection of one alternative affects the availability of another alternative. In addition, one customer may

want a red car and accept manual transmission, while another customer must have automatic transmission and color is unimportant. Accordingly, there is a need for a search method that provides information interactively as to how certain alternative selections affect the number of remaining alternatives and/or matching items and allows a user to modify selection priorities during the course of the search." (*Id* at 3:6-17.) Because a person of ordinary skill in the art developing the on-line information retrieval systems described in Graber would naturally want an on-line information retrieval to be friendly and easy to use, they would be motivated by Danish to apply its information retrieval concepts to provide consumers more efficient ways to identify products that are both of interest and not of interest, such as removing and adding alternatives resulting from a user's search selections. For example, Danish teaches that a user friendly informational retrieval service preferably removes unavailable alternatives options and adds back available alternatives as a user updates a search, which a person of ordinary skill in the art would be motivated to apply in view of Danish's express teachings about developing a user friendly search interface.

Graber in view of Admitted Prior Art. The '601 Patent describes admitted prior art knowledge of one of ordinary skill in the art as it relates to development of web-based systems. In designing the web-based system disclosed in Graber, a person of ordinary skill in the art would apply their knowledge, experience, and training, including the admitted prior art.

Graber in view of Williams. Graber teaches the use of servers to load HTML web pages to the client. For example, the CGI program called by "page_link.cgi" is a CGI program running on a web page server. (*See* Graber, Figs. 1, 6.) Further, as explained in Williams, "Java supports the notion of client-side validation, offloading appropriate processing onto the client for improved performance. Dynamic, real-time Web pages can be created. Using the above-mentioned custom UI components, dynamic Web pages can also be created." (Williams at 10:3-5.) Thus, Williams

teaches the benefits of applying Java to improve performance by downloading code to a client to execute functionality such as the state preservation techniques of Graber. Therefore, a person of ordinary skill in the art would have been motivated to move the embedding functionality to the client to improve the performance, and reduce the computational burden on the server by offloading processing from the server to the client.

WebStar in view of Danish. WebStar teaches interfacing with Patient Records contained on Oracle database. (*See* WebStar at 152.) Because a person of ordinary skill in the art developing an interface for patient records would naturally want an on-line information retrieval to be friendly and easy to use, they would be motivated by Danish to apply its information retrieval concepts to provide consumers more efficient ways to identify products that are both of interest and not of interest, such as removing and adding alternatives resulting from a user's search selections. For example, Danish teaches that a user friendly informational retrieval service preferably removes unavailable alternatives options and adds back available alternatives as a user updates a search, which a person of ordinary skill in the art would be motivated to apply in view of Danish's express teachings about developing a user friendly search interface.

Web Star in view of Williams. WebStar teaches the use of servers running Web* to perform certain functions, such as performing state freezing. (*See* WebStar at 150-151.) To the extent WebStar does not anticipate claim 4, it would have been obvious to a person of ordinary skill in the art to combine the concept of dynamically downloading code to the client to perform the step of embedding because, as explained in Williams, "Java supports the notion of client-side validation, offloading appropriate processing onto the client for improved performance. Dynamic, real-time Web pages can be created. Using the above-mentioned custom UI components, dynamic Web pages can also be created." (Williams at 10:3-5.) Therefore, a person of ordinary skill in the art

would have been motivated to move the embedding functionality to the client to improve the performance, and reduce the computational burden on the server by offloading processing from the server to the client.

Spinning the Web in view of Williams. Spinning the Web teaches the use of preserving state information in an HTTP conversation by embedding that information into hyperlinks to be sent to a user's browser. To the extent that Spinning the Web does not disclose claims 4 and 5, it would have been obvious to a person of ordinary skill in the art to combine the concept of dynamically downloading code to the client to perform the step of embedding because Spinning the Web explains the power and reasoning for using Java or Javascript for running client-side program code when developing web-based services, and Williams further explains that "Java supports the notion of client-side validation, offloading appropriate processing onto the client for improved performance. Dynamic, real-time Web pages can be created. Using the above-mentioned custom UI components, dynamic Web pages can also be created." (Williams at 10:3-5.) Thus, Williams teaches the benefit of applying Java to improve performance by having clients download code to execute functionality such as the state preservation techniques of Spinning the Web. Therefore, a person of ordinary skill in the art would have been motivated to move the embedding functionality to the client to improve the performance, and reduce the computational burden on the server by offloading processing from the server to the client.

Spinning the Web in view of Unleashed and Danish. Unleashed is both intended to and teaches how to apply known software programming language like CGI and Java in extending application and commerce related activities to the Internet. Based on the intended purpose of Unleashed of educating developers about improved programming languages and techniques, they would naturally consult and apply the teachings of Unleashed as part of developing web services

that required state preservation, such as in fleshing out the examples of state preservation and web development found in Spinning the Web.

Furthermore, both Spinning the Web and Unleashed relate to the development of web technologies of various kinds, including HTML and CGI, and therefore are related by both subject matter and area of work, and a developer would naturally consider the teaching of each in addressing the application of known coding techniques to preserve state and implement the related searching. For example, Unleashed specifically presents component product related searches and a person of ordinary skill in the art would be motivated to apply search techniques disclosed in Unleashed as part of developing a system that provided further ease of use and additional functionality to an end user that addressed issues presented in each reference. Similarly, Spinning the Web discusses the need to preserve state information and exemplary solutions doing so, and Unleashed details additional state preservation techniques that could be applied with software languages that a person of ordinary skill in the art was increasingly interested in applying, such as CGI and Java, and the benefits of applying such languages and disclosed techniques. For example, Unleashed explains that the "clever developer can overcome the statelessness of HTTP by including data in the gateway programs response that the client can then make use of to issue a new request," and presents techniques for same. (*See* Unleashed at 519; *see also* pp. xxii-xxiii ("Part IV of this book is a complete guide to all aspects of gateway programming, the key to providing interactive services on the Web. Starting off with the basic principles and fundamentals, this part presents many self-contained case studies in such areas as libraries, databases, text search and retrieval, and interactive applications. This part also reviews issues of gateway programming transactions and security as well as special topics and language options for gateway programming.").) In addition to the forgoing, to the extent Unleashed does not anticipate claims 9 or 58, it would have been obvious

to a person of ordinary skill in the art to combine the concept of filtering hyperlinks or data according to predetermined criteria, as disclosed in Danish, with Unleashed and Spinning the Web because it was a known method for removing data or hyperlinks before a webpage is displayed for each of the reasons discussed above. Further, to the extent Unleashed does not anticipate claims 10 or 59, it would have been obvious to a person of ordinary skill in the art to combine the concept of addition hyperlinks or data according to predetermined criteria, as disclosed in Danish, with Unleashed for each of the reasons discussed above.

The Amazon 1995 Website in view of Williams. The 1995 Amazon Website teaches the use of preserving state information in an HTTP conversation by embedding that information into hyperlinks to be sent to a user's browser, cookies, and HTML Forms with state information embedded in the submission URL. To the extent that The 1995 Amazon Website does not disclose claims 4 and 5, it would have been obvious to a person of ordinary skill in the art to combine the concept of dynamically downloading code to the client to perform the step of embedding because Williams explains that "Java supports the notion of client-side validation, offloading appropriate processing onto the client for improved performance. Dynamic, real-time Web pages can be created. Using the above-mentioned custom UI components, dynamic Web pages can also be created." (Williams at 10:3-5.) Thus, Williams teaches the benefit of applying Java to improve performance by having clients download code to execute functionality such as the state preservation techniques of The 1995 Amazon Website. Therefore, a person of ordinary skill in the art would have been motivated to move the embedding functionality to the client to improve the performance, and reduce the computational burden on the server by offloading processing from the server to the client.

The Amazon 1995 Website in view of Unleashed and Danish. Unleashed is both intended to and teaches how to apply known software programming language like CGI and Java in extending application and commerce related activities to the Internet. Based on the intended purpose of Unleashed of educating developers about improved programming languages and techniques, they would naturally consult and apply the teachings of Unleashed as part of developing web services that required state preservation, such as in fleshing out the examples of state preservation and web development found in The Amazon 1995 Website.

Furthermore, Unleashed relates to the development of web technologies of various kinds, including HTML and CGI, and The Amazon 1995 Website is an operating example of web technologies of the time, and therefore they references are related by both subject matter and area of work, and a developer would naturally consider the teaching of each in addressing the application of known coding techniques to preserve state and implement the related searching. For example, Unleashed specifically presents component product related searches and a person of ordinary skill in the art would be motivated to apply search techniques disclosed in Unleashed as part of developing a system that provided further ease of use and additional functionality to an end user that addressed issues presented in each reference. Similarly, The Amazon 1995 Website attempts to preserve state information in multiple ways, and Unleashed details additional state preservation techniques that could be applied with software languages that a person of ordinary skill in the art was increasingly interested in applying, such as CGI and Java, and the benefits of applying such languages and disclosed techniques. For example, Unleashed explains that the "clever developer can overcome the statelessness of HTTP by including data in the gateway programs response that the client can then make use of to issue a new request," and presents techniques for same. (*See* Unleashed at 519; *see also* pp. xxii-xxiii ("Part IV of this book is a complete guide to all aspects

of gateway programming, the key to providing interactive services on the Web. Starting off with the basic principles and fundamentals, this part presents many self-contained case studies in such areas as libraries, databases, text search and retrieval, and interactive applications. This part also reviews issues of gateway programming transactions and security as well as special topics and language options for gateway programming.").) This is similar to the technique actually applied by The Amazon 1995 Website. In addition to the forgoing, to the extent Unleashed does not anticipate claims 9 or 58, it would have been obvious to a person of ordinary skill in the art to combine the concept of filtering hyperlinks or data according to predetermined criteria, as disclosed in Danish, with Unleashed and The Amazon 1995 Website because it was a known method for removing data or hyperlinks before a webpage is displayed for each of the reasons discussed above. Further, to the extent Unleashed does not anticipate claims 10 or 59, it would have been obvious to a person of ordinary skill in the art to combine the concept of addition hyperlinks or data according to predetermined criteria, as disclosed in Danish, with Unleashed and The Amazon 1995 Website for each of the reasons discussed above.

Furthermore, both Unleashed and Danish discuss examples of catalog searching and therefore are related by both subject matter and area of work, and a developer would naturally consider the teaching of each in addressing the application of known coding techniques to preserve state and implement the related searching. For example, Unleashed specifically presents component product related searches, as does Danish, and a person of ordinary skill in the art would be motivated to apply existing and alternative search techniques like the parametric component searching disclosed in Danish to the component searching disclosed in Unleashed as part of developing a system that provided further ease of use and additional functionality to an end user that addressed

issues presented in each reference. Similarly, Danish discusses the need to preserve state information and one exemplary solution for same, and Unleashed details additional state preservation techniques that could be applied with software languages that a person of ordinary skill in the art was increasingly interested in applying, such as CGI and Java, and the benefits of applying such languages and disclosed techniques.

In addition, Danish explains that "[t]he widespread use of computers and electronic searching has attracted the attention of large manufacturers offering a vast array of products in an increasingly competitive environment. In an effort to offer product that closely matches customer needs, manufacturers proliferate product and product feature alternatives. This proliferation of product offerings provides the customer with more options from which to choose, however, it also increases the difficulty of finding the one product offering that best addresses a specific customer's needs." (Danish at 1:30-33.) Danish further explains that "[d]ifferent customers have different preferences, and in many cases a customer is somewhat flexible concerning the product to buy as long as the customer is informed as to how the selection of one alternative affects the availability of another alternative. In addition, one customer may want a red car and accept manual transmission, while another customer must have automatic transmission and color is unimportant. Accordingly, there is a need for a search method that provides information interactively as to how certain alternative selections affect the number of remaining alternatives and/or matching items and allows a user to modify selection priorities during the course of the search." (Danish at 3:6-17.) Because developers naturally want their search offerings to be friendly and easy to use, this teaching would motivate a person of ordinary skill in the art to apply the search techniques of Danish in combination with the product searches of Unleashed to provide consumers more efficient ways to identify products that are both of interest and not of interest, such as improving the exemplary searches

presented in Unleashed.

Moreover, Danish presents an Internet embodiment of parametric searching, and identifies the need to preserve state and a specific example of how to preserve that state. And, Danish teaches that there are certain restrictions on building an interactive screen with then-current Internet capabilities. (*See* Danish at 18:35-39.) A person of ordinary skill in the art would have been motivated to apply the teachings of Unleashed to overcome those restrictions. Unleashed presents multiple additional ways to preserve state information, including detailed coding examples for preserving such state information. As Unleashed is a reference intended to reach its audience about the application of CGI techniques, including preserving state in a stateless conversation, and a person of ordinary skill in the art would be motivated to consult and apply the teachings in Unleashed as part of the development of catalog searching as detailed in Unleased and the catalog parametric searching discussed in Danish. Indeed, the intent of Unleashed was to educate developers about the benefits of applying its disclosed techniques in developing web pages and services. Danish presents a web development process, web implementation and tools, scripting techniques, and sample code to explain how certain features, such as state preservation, can be implemented. For example, Unleashed explains that the "clever developer can overcome the statelessness of HTTP by including data in the gateway programs response that the client can then make use of to issue a new request," and presents techniques for same. (*See* Unleashed at 519; *see also* pp. xxii-xxiii ("Part IV of this book is a complete guide to all aspects of gateway programming, the key to providing interactive services on the Web. Starting off with the basic principles and fundamentals, this part presents many self-contained case studies in such areas as libraries, databases, text search and retrieval, and interactive applications. This part also reviews issues of gateway programming transactions and security as well as special topics and language options for gateway programming.").)

In addition to the forgoing, to the extent Unleashed does not anticipate claims 9 or 58, it would have been obvious to a person of ordinary skill in the art to combine the concept of filtering hyperlinks or data according to predetermined criteria, as disclosed in Danish, with Unleashed because it was a known method for removing data or hyperlinks before a webpage is displayed for each of the reasons discussed above. Further, to the extent Unleashed does not anticipate claims 10 or 59, it would have been obvious to a person of ordinary skill in the art to combine the concept of addition hyperlinks or data according to predetermined criteria, as disclosed in Danish, with Unleashed for each of the reasons discussed above.

4. The ’346 Patent

The references related to the ’346 patent also all deal with the same technological field: exchange of user information for single sign-on functionality and the creation of user accounts in a seamless manner in a federated computing environment. Many of the references provide a teaching or motivation to combine them to arrive at the alleged invention of the ’346 patent. For example, the references describe both the same problem and similar solutions, and many use the same language to describe the problems and solutions, such as “automated login,” “single sign-on”, and “identity provider.” Because such similarities, *inter alia*, indicate that these references are all directed to the same or a similar technological field, a person of ordinary skill in the art would naturally be aware of and combine these similar and well-known teachings of the references.

Groupon provides the following non-exclusive examples of motivations to combine the various references identified herein.

As described by Liberty Alliance, Grandcolas, Pfitzmann, Sunada, and Mellmer, it was known that a user could have several accounts at several service providers and that single-sign-on procedures provided a way to reduce the administrative burden on users and system administrators in creating and maintaining those accounts. Moreover, it was known that local accounts were

required for accessing protected resources at service providers. (*See, e.g.*, '346 patent at 1:28-30.) A person of ordinary skill in the art would have been motivated to use the concept of runtime account creation as disclosed by Grandcolas, Sunada, or Mellmer, with known single-sign-on systems as disclosed by Liberty Alliance or Pfitzmann because it would have: (1) reduced the administrative burden on identity providers and service providers of having to create all service provider user accounts *a priori*, and (2) provided a known and desirable alternative to refusing service to a user that is known to an identity provider that is federated with a service provider. Moreover, implementing runtime account creation with known single-sign-on solutions would have predictably enabled a user to have a cohesive, tangible network identity while "enable[ing] businesses to maintain and manage their customer relationships without third-party participation." (Liberty Alliance Specification at 7.) For example, Sunada discloses that "[i]f there is no user account, it obtains information regarding the user from the SSO server 1, uses attribute association information in the attribution association database 24 to automatically generate user account information, and registers it in the user account information database 23." (Sunada at Means for Resolution; *see also* Mellmer at Fig. 34.)

Furthermore, to the extent that any of the references are found to not teach user authentication operations in a federated environment as required by claim 1, federated computing environments, such as those described in Liberty Alliance, Doshi, Grandcolas, Harris, Moreh, Weissman, and Yared were known. Moreover, it would have been obvious to a person of ordinary skill in the art to combine user authentication schemes with federated computer environment because of the added level of access between those systems, the pre-established trust between those systems, and the lack of need of a single centralized identity service. (*See, e.g.*, Harris at 1-2.)

In addition, to the extent that any of the prior art references are found to not teach creating requesting additional information from an identity provider before creating an account, it would have been obvious to implement that functionality with known single-sign-on solutions because the identity provider is known to have user information and it was known that multiple requests could be made of an identity provider to gain additional information about a user attempting to use that identity provider for single-sign-on. (*See, e.g.*, Pfitzmann.) Similarly, as disclosed in Sunada, it was known that multiple requests for information may be required before a user account could be created. (*See* Sunada at Fig. 3, S37-S38.)

A person of ordinary skill in the art would have found it obvious to add runtime account creation to known single sign on solutions because it would have been applying a known technique to a known device (method, or product) ready for improvement to yield predictable results. For example, creating accounts on the fly as part of a single sign on operation was a known technique for conveniently creating an account for a user on the fly before that user can access a protected resource. (*See* Sunada; *see also* Mellmer.) Known single sign on solutions, such as Pfitzmann, that did not use or disclose on-the-fly account creation, were ready for improvement to add that on-the-fly account creation functionality because it would have predictably added the convenience of an automatically-created account without imposing additional steps or requirements on the user or system administrators. Furthermore, users would have "expect[ed] that computer systems co-ordinate their actions so that burdens on the user are reduced." ('346 patent at 1:25-27.) The predictable result would be that an account would be created on the fly (and therefore predictably reduce the burden on the user) and would permit the user to access certain resources that are only accessible to those with an account. Such automation of the account creation process is exactly the type of coordination between computer systems that users would have expected. (*See id.*)

To the extent that any of the prior art references are found to not teach performing a preliminary user account creation operation to commence creation of the user account for the user prior to retrieving user attribute information for the user, it would have been obvious to implement that functionality because it would have enabled the service provider to make a record of incomplete user account data while additional necessary data was retrieved. For example, Pfitzmann discloses multiple requests and responses for attributes, which would have yielded the predictable result of supplying additional information if it is determined that additional information is necessary. However, by implementing a preliminary user account creation operation, intermediate user attributes could be stored until they could be used for a completing account creation step when additional user attribute information is available.

To the extent that any of the prior art references are found to not teach performing a concluding user account creation operation to complete creation of the user account for the user after retrieving user attribute information for the user, it would have been obvious to implement that functionality. For example, Sunada discloses, "Upon putting together information necessary for creating the user account in this manner, S39 creates the user account information and registers it with the user account information database 23. With this, in a case where the access state is that of being logged in, the user account information now exists." (Sunada at 35.) Adding such a concluding user account creation operation would allow the account to be created on the fly, which in turn would provide the predictable result of increasing the convenience for the user and reducing the administrative burden on system administrators.

By way of further example, Liberty Alliance teaches detailed exchange of information in the form of industry standardized single-on sign operations in Federated Systems, but does not expressly teach the creation of user accounts during single sign-on. Grandcolas teaches single-

sign-on operations in Federated Systems, including the creation of user accounts at a service provider when such an account does not exist. One of ordinary skill in the art would be motivated to combine the teachings of Grandcolas for commercial, customer experience, and each of use operations. For example, one of ordinary skill in the art would be motivated to use the implementation details found in Liberty Alliance to ensure broader adoption and easier application of the disclosed infrastructures, software, and web services. Indeed, the goals of the Liberty Alliance specifically included defining standards for developing identity-based infrastructures, software, and web services as disclosed Grandcolas, and to promote adoption of these standards in such infrastructures, software, and web services. And, Liberty Alliance encouraged adoption of its teaching is federated single sign-on services like Grandcolas.

In addition, Pfitzmann discloses detailed exchange of information in the form of industry standardized and/or extensively adopted single-on sign operations in Federated Systems, including Liberty Alliance, Microsoft Passport, Security Assertions Markup Language, Shibboleth, IBM e-Community SSO, but does not expressly teach the creation of user accounts during single sign-on. Sunada and Melmer teach single-on operations in Federated Systems, including the creation of user accounts at a service provider when such an account does not exist. One of ordinary skill in the art would be motivated to combine the teachings of Pfitzmann for commercial, customer experience, and each of use operations with those of Sunada or Melmer. The different single-sign operations are matters of obvious design choice, and the disclosed operations are substantially similar as disclosed in Figure 2 of Pfitzmann. One of ordinary skill in the art would be motivated to use the implementation details found in industry standardized and/or extensive adopted protocols to ensure broader adoption and easier application of the respective disclosed infrastructures,

software, and web services. Indeed, the goals of the of these organizations, such as Liberty Alliance, specifically included defining standards for developing identity-based infrastructures, software, and web services as disclosed Pfitzmann, and to promote adoption of these standards in such infrastructures, software, and web services. And, Liberty Alliance encouraged adoption of its teaching is federated single sign-on services like Sunada and Mellmer.

Furthermore, Pfitzman explains that security and privacy concerns of users have hampered adoption of single sign-on systems. Pfitzmann discloses techniques to address these concerns in the context of Federated Single Sign-On, and one of ordinary skill would be motivated by commercial and user experience considerations to apply the teachings of Pfitzman, including industry standardized protocols and additional design considerations, in developing the systems of Sunada and Melmer to ensure broader adoption.

For all of the patents-in-suit, the identified references, alone or in combination, also contain an explicit and/or implicit teaching, suggestion, motivation, or inference to combine them within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address the same technical issues and suggest similar solutions to those issues. Moreover, many of these references cross-reference and discuss one another, providing an explicit motivation to combine such references and further illustrating the close technical relationship among this group of references. Indeed, multiple references were authored or developed by the same person(s) and/or companies. If and to the extent that IBM challenges the applicability of any of these references with respect to particular limitations of the asserted claims of the patents-in-suit, Groupon reserves the right to supplement this disclosure to provide additional explanation for why particular references should and could be combined with one another.

Groupon may also rely on expert testimony to establish that the asserted claims of the patents-in-suit are invalid as obvious.

For all of the patents-in-suit, the identified references, alone or in combination, also contain an explicit and/or implicit teaching, suggestion, motivation, or inference to combine them within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address the same technical issues and suggest similar solutions to those issues. Moreover, many of these references cross-reference and discuss one another, providing an explicit motivation to combine such references and further illustrating the close technical relationship among this group of references. Indeed, multiple references were authored or developed by the same person(s) and/or companies. If and to the extent that IBM challenges the applicability of any of these references with respect to particular limitations of the asserted claims of the patents-in-suit, Groupon reserves the right to supplement this disclosure to provide additional explanation for why particular references should and could be combined with one another. Groupon may also rely on expert testimony to establish that the asserted claims of the patents-in-suit are invalid as obvious.[2]

The combinations of references provided above and in the accompanying prior art reference charts in Exhibits A1-A30, B1-B27, C1-C28, and D1-25 are exemplary and are not intended to be exhaustive. Additional obviousness combinations of the references identified herein are possible, and Groupon reserves the right to use any such combination(s) in this litigation. In particular, Groupon is currently unaware of IBM's allegations with respect to the level of skill in the art and

[2] The references identified in this section are only examples of the references that one of ordinary skill in the art would consider to be part of the same body of work and in same technical field and is not meant to be limiting in any way.

the qualifications of the typical person of ordinary skill in the art. Groupon is also unaware of the extent, if any, to which IBM may contend that limitations of the claims at issue are not disclosed in the prior art identified by Groupon as anticipatory and the extent to which IBM will contend that elements not disclosed in the specifications of the patents-in-suit would have been known to persons of skill in the art. Groupon reserves the right to supplement this disclosure to identify other references that would have made such limitations obvious in view of the relevant disclosures.

B. 35 U.S.C. § 112

As noted below, some of the asserted claims of the patents-in-suit are invalid as indefinite (35 U.S.C. § 112 ¶ 2), lacking a proper written description (35 U.S.C. § 112 ¶ 1), and/or failing to enable one of ordinary skill in the art at the time the invention was made to make or use the alleged invention (35 U.S.C. § 112 ¶ 1). The following identification of claims and claim elements are only exemplary, and Groupon reserves the right to supplement the identification of claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112. Specifically, Groupon reserves the right to identify additional claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112 after the Court construes the claims in this case.

1. The '967 Patent

Claims 1-17 fail to comply with 35 U.S.C. § 112 ¶ 2 because a person of ordinary skill at the time of the invention would have been unable to distinguish between "applications," under IBM's apparent application of that term. IBM contends different "applications" can be delineated by examining the sequence of pages used in one application versus another. *See* IBM's Final Infringement Contentions, Exhibit A at p. 3 ("The sequence of pages for purchasing local vouchers on the Local/Nearby application distinguishes it from other applications that have their own sequence of pages. For example, switching from purchasing local vouchers to purchasing goods starts a new sequence of pages, and thus a new application."). Groupon does not agree that a

delineation based on this criteria is possible and contends the term is indefinite. Groupon further does not agree that different applications have been accurately identified in the accused websites and mobile applications in IBM's Infringement Contentions.

The phrase "the predetermined plan" in claim 4 fails to comply with 35 U.S.C. § 112 ¶ 2 because it lacks antecedent basis. Claims 4-9 are accordingly indefinite.

The phrase "the navigation procedures includes enabling the user to access a physical analogy of the available applications from which a desired application may be selected" fails to comply with 35 U.S.C. § 112 ¶ 2, rendering claim 8 indefinite.

Claims 1-17 fail to comply with 35 U.S.C. § 112 ¶ 1 in that the specification lacks support for a "computer network" or "network" to the extent that term is construed to encompass a reception system obtaining objects from anything other than a single central host computer.

2. The '849 Patent

Claims 1, 8, and 14 fail to comply with 35 U.S.C. § 112 ¶ 2 because a person of ordinary skill at the time of the invention would have been unable to distinguish between "applications," under IBM's apparent application of that term. IBM contends different "applications" can be delineated by examining the sequence of pages used in one application versus another. *See* IBM's Final Infringement Contentions, Exhibit B at p. 11 ("The sequence of pages for purchasing local vouchers on the Local/Nearby application distinguishes it from other applications that have their own sequence of pages. For example, switch-ing from purchasing local vouchers to purchasing goods starts a new sequence of pages, and thus a new application."). Groupon does not agree that a delineation based on this criteria is possible and contends the term is indefinite. Groupon further does not agree that different applications have been accurately identified in the accused websites and mobile applications in IBM's Infringement Contentions.

The terms "structuring applications" and "structuring advertising" fail to comply with 35 U.S.C. § 112 ¶ 1 because the specification fails to describe how applications or advertising may be "structured," at least under IBM's apparent construction.

The phrase "structuring advertising in a manner compatible to that of the applications" fails to comply with 35 U.S.C. § 112 ¶ 2 because, at least based on the apparent construction of this term in IBM's Final Infringement Contentions, it would not be clear to a person of ordinary skill in the art what it takes for the structure of advertising to be "compatible" with that of the applications.

The phrases "advertising object" and "advertising data" fail to comply with 35 U.S.C. § 112 ¶ 2 because, at least based on the apparent constructions adopted in IBM's Final Infringement Contentions, it would not be clear to a person of ordinary skill in the art how to distinguish "advertising object" from "advertising data."

Claims 1-21 fail to comply with 35 U.S.C. § 112 ¶ 1 in that the specification lacks support for a "computer network" or "network" to the extent that term is construed to encompass a reception system obtaining objects from anything other than a single central host computer.

3. The '601 Patent

The phrase "filtering one of said hyperlinks and data output from said services according to a predetermined criteria" fails to comply with 35 U.S.C. § 112 ¶ 1 because the specification fails to describe how the filtering is performed, at least under IBM's apparent construction.

The phrase "adding one of said hyperlinks and data to said output from said services according to a predetermined criteria" fails to comply with 35 U.S.C. § 112 ¶ 1 because the specification fails to describe how the filtering is performed, at least under IBM's apparent construction.

The phrase "dynamically downloading computer program code to the client to perform said step of embedding which is responsive to said step of communicating the output to the

client" fails to comply with 35 U.S.C. § 112 ¶ 1 because the specification fails to describe how the filtering is performed, at least under IBM's apparent construction.

Claim 63 fails to comply with 35 U.S.C. § 112 ¶ 2 because the claim upon which it depends, Claim 60, requires communicating "a response including the continuations and embedded state information" meaning that communicating must occur after the embedding step. Claim 63 states that embedding occurs after (and responsive to) the communicating, which is impossible.

4. The '346 Patent

The phrase "back-channel information retrieval mechanism" fails to comply with 35 U.S.C. § 112 ¶ 2, rendering claim 8 indefinite.

C. 35 U.S.C. § 101

The asserted claims of the '967 patent are invalid under 35 U.S.C. § 101 for failure to recite patentable subject matter. Groupon incorporates by reference its arguments presented in the briefing for its motion for judgment on the pleadings. (D.I. 29, 39, 167.) The asserted claims of the '849 patent are invalid under 35 U.S.C. § 101 for failure to recite patentable subject matter. Groupon incorporates by reference its arguments presented in the briefing for its motion for judgment on the pleadings. (D.I. 29, 39, 167.)

II. ACCOMPANYING DOCUMENT PRODUCTION

Groupon has produced invalidating prior art references and corroborating evidence concerning prior art systems, including the prior art references described in this document and the attached exhibits. These prior art references and corroborating evidence are cited in and support the provided invalidity claim charts.

Dated: September 25, 2017

Of counsel:

J. David Hadden
Email: dhadden@fenwick.com
Saina S. Shamilov
Email: sshamilov@fenwick.com
Phillip J. Haack
Email: phaack@fenwick.com
Adam M. Lewin
Email: alewin@fenwick.com
FENWICK & WEST LLP
801 California Street
Mountain View, CA 94041
Telephone: 650.988.8500
Facsimile: 650.938.5200

By: */s/ Phillip J. Haack*
Phillip J. Haack (*pro hac vice*)
John G. Day (#2403)
Ashby & Geddes, P.A.
500 Delaware Avenue, 8th Floor
P.O. Box 1150
Wilmington, DE 19899
(302) 654-1888
jday@ashby-geddes.com

Counsel for Defendant
GROUPON, INC.

CERTIFICATE OF SERVICE

I hereby certify that on this 25th day of September, 2017, a true and correct copy of the foregoing document was served on each party through their counsel of record via email.

John M. Desmarais
Karim Oussayef
Robert C. Harrits
Laurie N. Stempler
Jon T. Hohenthaner
DESMARAIS LLP
230 Park Avenue
New York, NY 10169
Tel: (212) 351-3400
jdesmarais@desmaraisllp.com
koussayef@desmaraisllp.com
rharrits@desmaraisllp.com
lstempler@desmaraisllp.com
jhohenthaner@desmaraislp.com

Of Counsel for Plaintiff International Business Machines Corporation

David E. Moore (#3983)
Bindu A. Palapura (#5370)
Stephanie E. O'Byrne (#4446)
POTTER ANDERSON & CORROON LLP
Hercules Plaza, 6th Floor
1313 N. Market Street
Wilmington, DE 19801
Tel: (302) 984-6000
dmoore@potteranderson.com
bpalapura@potteranderson.com
sobyrne@potteranderson.com

Counsel for Plaintiff International Business Machines Corporation.

/s/ *Jessica Benzler*
Jessica Benzler
jbenzler@fenwick.com
FENWICK & WEST LLP
Silicon Valley Center
801 California Street
Mountain View, California 94041
Telephone: (650) 988-8500
Facsimile: (650) 938-5200

Attorneys for Defendant
GROUPON, INC.

EXHIBIT 2

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

INTERNATIONAL BUSINESS MACHINES CORPORATION, Plaintiff, v. GROUPON, INC. Defendant.	C.A. No. 16-122-LPS-CJB JURY TRIAL DEMANDED

PRELIMINARY INVALIDITY CONTENTIONS OF DEFENDANT GROUPON, INC.

Pursuant to the Court's October 3, 2016 Order (D.I. 17) and December 19, 2016 Order (D.I. 32), Defendant Groupon, Inc. ("Groupon") makes the following preliminary disclosure of Invalidity Contentions to Plaintiff International Business Machines Corporation ("IBM") regarding the currently asserted claims of United States Patent Nos. 5,796,967 (the "'967 patent"), 7,072,849 (the "'849 patent"), 5,961,601 (the "'601 patent"), and 7,631,346 (the "'346 patent"), collectively referred hereto as the "patents-in-suit." In its January 20, 2017 Preliminary Infringement Contentions ("Infringement Contentions"), IBM asserts claims 1-9, 12, and 17 of the '967 patent, claims 1-9, 12-21, and 25 of the '849 patent, claims 1-12, 14-25, 27-38, 40-49, and 51-68 of the '601 patent, and claims 1-3, 5, 8, 10, and 12-13 of the '346 patent (collectively, the "Asserted Claims").

This preliminary disclosure is based on Groupon's present understanding of IBM's interpretation of the claims of the patents-in-suit as advanced by IBM in its Preliminary Infringement Contentions. Nothing in Groupon's disclosures should be regarded as necessarily reflecting the

proper interpretation of the claims or an interpretation of the claims Groupon agrees with or proposes. Groupon disputes IBM's apparent claim interpretations and will propose alternative constructions to those proposed by IBM in its infringement contentions at the appropriate time.[1]

Groupon will amend and supplement these disclosures as it continues to search for and analyze relevant prior art. Groupon may rely on additional prior art; further analysis of prior art; application of prior art to new or different claims, depositions and discovery from prior art sources and authors; analysis of prior art products; combinations of references; expert opinion and/or testimony; evidence supporting invalidity of any asserted claim; and any additional relevant information that may result from its further investigation and discovery. Groupon may also rely on additional information, testimony, and/or analysis concerning operation of any prior art systems. And, Groupon may also amend and supplement this disclosure consistent with the Court's Scheduling Order (D.I. 17) or otherwise as the Court may allow.

Further, Groupon may amend or supplement this disclosure because IBM's preliminary infringement disclosures are deficient in numerous respects. For example, IBM has failed to specifically identify where each element of each Asserted Claim is found within each accused instrumentality. IBM has failed to identify the type of conduct alleged to infringe or the persons or entities that allegedly engage in such conduct. IBM has also failed to identify specifically whether each limitation is purportedly literally present or present under the doctrine of equivalents in each accused instrumentality. Because curing such deficiencies may lead to fur-

[1] Groupon is aware of the claim construction order in *International Business Machines v. The Priceline Group*, C.A. No. 15-cv-00137-LPS, D.I., 234, 235 (D. Del. October 28, 2016), and is applying the constructions therein as appropriate in these contentions. Groupon does not concede that this order renders the claim construction process in the instant case superfluous and reserves all of its rights to advocate for a construction of any term in the asserted claims pursuant to the scheduling order in this action. (D.I. 17)

ther grounds for invalidity and non-infringement, Groupon specifically reserves the right to modify, amend, or supplement this disclosure should IBM amend or supplement its infringement contentions.

Groupon may also amend this disclosure in response to any positions taken by IBM during the course of the litigation, including without limitation IBM's claim construction positions or any contention by IBM that the prior art references described herein fail to render the Asserted Claims anticipated or obvious. Groupon reserves the right to amend these Preliminary Invalidity Contentions to rely upon inventor and party admissions concerning the scope of the Asserted Claims and the teachings of the prior art and in response to any claim construction order from the Court.

Groupon may further supplement or amend this disclosure once IBM complies with its discovery obligations. To date, IBM has not yet produced all prior art and invalidity disclosures, including invalidity contentions, deposition testimony, and expert reports from *International Business Machines v. The Priceline Group*, C.A. No. 15-cv-00137-LPS (D. Del.). Once IBM complies with its discovery obligations and Groupon meaningfully reviews IBM's production, Groupon may supplement or amend this disclosure.

I. PRELIMINARY INVALIDITY CONTENTIONS

Groupon's prior art reference charts (attached hereto as Exhibits A1-A24, B1-B26, C1-C15 and D1-18) identify where specifically in each item of prior art each element of each asserted claim is found, citing particular teachings/disclosure of the referenced art as applied to features of the patents-in-suit. While each element of each asserted claim is found in each item of prior art in multiple locations, the attached charts provide examples of citations sufficient to identify at least one such location where each claim limitation is found in each item of prior art. The citations are exemplary and not exclusive, and Groupon reserves the right to rely on uncited

portions of the prior art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context to them, and as additional evidence that the prior art discloses a claimed feature. Indeed, persons of skill in the art generally would understand an item of prior art in the context of other publications, literature, products, and understanding. Thus, Groupon reserves the right to establish what was known to a person having ordinary skill in the art through other publications, products, and/or testimony. Further, Groupon reserves the right to modify, amend, and/or change its interpretation of the prior art as additional or new constructions of the claim limitations may be provided by the Court, based on additional analysis by Groupon's technical expert witnesses or based on other circumstances that may affect the interpretation or application of the claims.

The following lists provide the identity of each item of prior art patent, publication, or system that anticipates one or more of the asserted claims of the patents-in-suit or renders one or more of the asserted claims of the patents-in-suit obvious.

U.S. Patent No. 5,796,967

Exhibit	Short Name
A01	Tornetta
A02	Hernandez
A03	CompuServe Navigator
A04	Designing Xerox
A05	Xerox Star
A06	Hypercard
A07	Yourick
A08	Teitelman
A09	Salomon
A10	Satyanarayanan
A11	Henderson
A12	Hedges

A13	CLAM
A14	Caplinger
A15	Agarwal
A16	CIM
A17	Alber
A18	Arlen
A19	Interactive Architecture
A20	Power of NAPLPS
A21	Gecsei
A22	Morris
A23	Smith
A24	Talarzyk
A25	Akscyn
A26	Halasz
A27	Irven
A28	Trintex

U.S. Patent No. 7,072,849

Exhibit	Short Name
B01	Alber
B02	Bado
B03	Caplinger
B04	CompuServe Navigator
B05	Freeman ’279
B06	Humble
B07	Malec
B08	Salomon
B09	Simon
B10	Talarzyk
B11	Telesophy 1985
B12	Telesophy 1987

B13	Trintex System
B14	Yourick
B15	Beyond Videotex
B16	Interactive Architecture
B17	Power of NAPLPS
B18	TextUp
B19	Nisenholtz
B20	CompuServe Information Manager
B21	Gecsei
B22	ITC Project
B23	Akscyn
B24	Halasz
B25	Irven
B26	Morris

U.S. Patent No. 5,961,601

Exhibit	Short Name
C01	Danish
C02	Diener
C03	DuFresne
C04	Farquhar
C05	Graber
C06	Ibrahim
C07	Levergood
C08	Levine
C09	Lewine
C10	Minor
C11	Payne
C12	Perrochon
C13	Popp

C14	Da Silva
C15	Tobin
C16	OCLC Gateway
C17	WebStar
C18	Unleashed
C19	Admitted Prior Art
C20	Yoshida
C21	Yan
C22	Chiu ’022
C23	Lewine ’565
C24	WWW-Talk
C25	Freeman-Benson

U.S. Patent No. 7,631,346

Exhibit	Short Name
D01	FIM
D02	Bladow
D03	Chawla ’492
D04	Chawla ’696
D05	Doshi
D06	Dutcher
D07	Grandcolas
D08	Harris
D09	Kelly
D10	Levergood
D11	Mellmer

D12	Moreh
D13	Purpura
D14	Sunada
D15	Ting
D16	Weissman
D17	Yared
D18	Erdos
D19	DigitalMe
D20	Pfitzmann
D21	Admitted Prior Art
D22	Demchenko
D23	Kirschner
D24	Sullivan
D25	Liberty Alliance

A. General State of the Art and Motivation to Combine

The following list identifies prior art references that establish the general state of the art at the time of each of the patents-in-suit. This list is not exhaustive and Groupon may supplement and amend this list as its investigation continues and the case progresses, and especially once IBM complies with its discovery obligations as described above. Groupon may also supplement and amend this list based on any information it gleans from expert or other witness testimony in either this case or the *Priceline* case.

U.S. Patent No. 5,796,967

Prior Art Patents and Patent Applications

Patent Number	Country of Origin	Date of Issue/ Publication
US 4,870,576 ("Tornetta")	US	Sept. 26, 1980 (March 19, 1986)
US 4,962,475 ("Hernandez")	US	Oct. 9, 1990 (Dec. 26, 1984)
US 4,775,935 ("Yourick")	US	Sept. 22, 1986 (Oct. 4, 1988)
US 5,072,412 ("Henderson")	US	March 25, 1987 (Dec. 10, 1991)
US 4,339,798 ("Hedges")	US	Dec. 17, 1979 (July 13, 1982)
US 4,688,167 ("Agarwal")	US	Sept. 27, 1984 (August 18, 1987)
US 4,649,380 ("Penna")	US	Mar. 10, 1987 (June 11, 1984)
US 4,807,142 ("Agarwal '142")	US	Feb. 21, 1989 (Oct. 9, 1984)
US 4,989,141 ("Lyons")	US	Jan. 29, 1991 (June 1, 1987)
US 5,157,717 ("Hitchcock")	US	Oct. 20, 1992 (Feb. 20, 1991)
US 5,202,828 ("Vertelney")	US	Apr. 13, 1993 (May 15, 1991)
US 5,367,624 ("Cooper")	US	Nov. 22, 1994 (June 11, 1993)
US 5,375,200 ("Dugan")	US	Dec. 20, 1994 (Nov. 13, 1992)
US 5,392,400 ("Berkowitz")	US	Feb. 21, 1995 (July 2, 1992)
US 5,432,901 ("Harper")	US	July 11, 1995 (Jan. 30, 1992)
US 5,434,963 ("Kuwamoto")	US	July 18, 1995 (Dec. 8, 1992)
US 5,463,726 ("Price")	US	Oct. 31, 1995 (Sept. 6, 1994)
US,4,689,478 ("Hale")	US	Aug. 25, 1987 (Dec. 24, 1984)

Prior Art Publications

Title	Date of Publication	Author/Publisher (short cite)
CompuServe Navigator User's Guide	January 1988	CompuServe ("CompuServe Navigator")
"Designing the Star User Interface"	April 1982	Dr. David Smith et al. / Byte Magazine, Volume 7, Issue 4 ("Byte Magazine")
Apple Macintosh HyperCard User's Guide	1987	Apple ("User's Guide")
The Complete HyperCard Handbook	1987	Danny Goodman ("Goodman")
The Complete HyperCard Handbook by Danny Goodman, Expanded 2nd Edition	1988	Danny Goodman ("Handbook")
HyperCard Developer's Guide	1988	Danny Goodman ("Developer's Guide")
"The star user interface: an overview"	1982	David Canfield Smith et al. / Proceedings of the National Computer Conference (1982) ("NCC Proceedings")
"The Xerox Star: A Retrospective"	September 1989	Jeff Johnson et al. / IEEE Computer, Volume 22, Issue 9 ("Johnson")
"A Tour Through Cedar"	1985	W. Teitelman / IEEE Transactions on Software Eng'g
"Design and Implementation of An Electronic Special Interest Magazine"	September 1986	Salomon / UCLA Thesis ("Salomon")
"The ITC Project: An Experiment in Large-Scale Distributed Personal Computing"	October 1984	M. Satyanarayanan ("Satyanarayanan")
"CLAM – an Open System for Graphical User Interfaces"	1987	Lisa A. Call et al. ("CLAM")
"An Information System Based on Distributed Objects"	October 4-8, 1987	Michael Caplinger, ("Caplinger")
"HyperCard Made Easy"	1988	William B. Sanders / Scott, Foresman and Company ("HyperCard Made Easy")
Videotex / Teletext: Principles & Practices	1985	Antone F. Alber, McGraw-Hill, Inc. ("Alber")
"Trintex: Exclusive Status Report"	November 1986	Gary Arlen, Videotex Teletext News, No. 94 ("Arlen")

Title	Date of Publication	Author/Publisher (short cite)
"Interactive Architecture And The Role Of The Designer"	1984	John Vaughan, Videotex Proceedings 1984 ("Interactive Architecture")
"The Power of NAPLPS: Beyond Videotex"	1985	John Vaughan, Videotex International Proceedings 1985 ("Power of NAPLPS")
The Architecture of Videotex Systems	1983	Jan Gecsei, Prentice-Hall, Inc. ("Gecsei")
"Caching Hints in Distributed Systems"	January 1987	Douglas B. Terry ("Terry")
"Hypermedia: finally here"	November 1987	Tekla S. Perry, IEEE Spectrum ("Perry")
"Custom Communications from the Consumer Databanks"	September 1987	Mick O'Leary ("O'Leary")
"Multi-Media Information Services: A Laboratory Study"	June 1988	Judith H. Irven et al. ("Irven")
"Andrew: A Distributed Personal Computing Environment"	March 1986	James H. Morris et al. ("Morris")
"Menlo Corporation's ProSearch: Review of a Software Search Aid"	1986	Barbara Quint ("Quint")
"Foreshadowing Electronic Publishing Age: First Exposures to Viewtron"	December 1985	Tony Atwater et al. ("Atwater")
"Defining Constraints Graphically"	April 1986	Alan Borning ("Borning")
"DVI - A Digital Multimedia Technology"	July 1989	David G. Ripley ("Ripley")
"The Trillium User Design Environment"	April 1986	D. Austin, Jr. Henderson ("Trillium User")
"The Consul/CUE Interface: An Integrated Interactive Environment"	December1983	Kaczmarek, T. et al. ("Kaczmarek")
"The Computer Sciences Electronic Magazine: Translating from Paper to Multimedia"	May 3, 1992	W. Randall Koons et al. ("Koons")
"KMS: A Distributed Hypermedia System for Managing Knowledge In Organizations"	November 1987	Robert Akscyn, et al. ("Akscyn")
"A Comparison Application Sharing Mechanisms Real-Time Desktop Conferencing Systems"	1990	S. R. Ahujaet al. ("Ahuja")

Title	Date of Publication	Author/Publisher (short cite)
"Reflections on Notecards: Seven Issues for the Next Generation of Hypermedia Systems"	July 1988	Frank G. Halasz ("Halasz")
"A Tour Through Cedar"	1985	Warren Teitelman ("Teitelman")
"An Input-Output Model for Interactive Systems"	April 1986	Mary Shaw ("Shaw")
"Officeaid: An Integrated Document Management System"	1984	Allison Lee et al. ("Officeaid")
"The Visi On Operating Environment"	September 1983	William T. Coleman III et al. ("Coleman")
"An Experimental Multi-Media Bridging System"	1988	E.J. Addeo et al. ("Addeo")
"A Multiple, Virtual-Workspace Interface Support User Task Switching"	1987	Stuart K. Card et al. ("Card")
"gIBIS: A Hypertext Tool for TeamDesign Deliberation"	November 1987	Conklin, Jeff et al. ("Conklin")
"A Control Panel Interface Graphics Image Processing ApplicATIONS"	1987	Gene I. Fisher et al. ("Fisher")
"HDM: A Model for the Design of Hypertext Applications"	December 1991	Franca Garzotto, et al. ("Garzotto")
"Enhancing the Usability of an Office Information System Through Direct Manipulation"	December 1983	Allison Lee et al. ("Office Information System")
"Domain Delphi: Retrieving Documents Online"	April 1986	Penny Orwick ("Orwick")
"Teletext and Videotex in the United States: Market Potential Technology Public Policy Issues"	1982	John Tydeman et al. ("Tydeman")
"New Package Rates"	July 7, 1987	Peter Helmer ("IBM-GROUPON10120808")
"Notes from Product Descriptor Meeting"	March 11, 1987	Trintex ("IBM-GROUPON10100828")
"Provider Agreements [Entered] "	July 20, 1987	Thomas Witt ("IBM-GROUPON10102751")
"Reception System Technical Review"	June 1986	Trintex ("IBM-GROUPON10102910")

Title	Date of Publication	Author/Publisher (short cite)
"Trintex Announces First Advertisers"	May 22, 1987	Trintex ("IBM-GROUPON10100493")
"Client Dates"	January 16, 1987	Susan Pechman ("IBM-GROUPON10120750")
"Coldwell Banker Invitation"	March 31, 1987	Bruce E. Bellmare ("IBM-GROUPON10102967")
"Component Level Advertising Descriptor"	January 17, 1986	Steven J. Schimmed ("IBM-GROUPON10103874")
"Dollar Bank, High Level Design"	May 5, 1987	Trintex ("IBM-GROUPON10121898")
"Dreyfus Invitation"	May 13, 1987	Bruce E. Bellmare ("IBM-GROUPON10103255")
"Trintex Product Descriptor"	February 23, 1987	Henry Heilbrunn ("IBM-GROUPON10100766")
"Contract Procedures"	February 27, 1987	Peter Helmer ("IBM-GROUPON10100914")
"Allstate Testing Letter"	May 8, 1987	Glenn Shapiro ("IBM-GROUPON10100910")
"Signed Provider Agreements"	July 8, 1987	Bruce W. Thurlby ("IBM-GROUPON10102738")
"System Architecture Overview"	February 24, 1986	A.M. Wolf ("IBM-GROUPON10120217")
"Visions Document"	April 10, 1987	Henry Heilbrunn ("IBM-GROUPON10120654")
"Viewtron: How to Use"	1983	AT&T ("Viewtron Video")
The New Electronic Media "Videotex"	1987	W. Wayne Talarzyk, Lexington Books ("Talarzyk")

Prior Art Systems/Services

Item/Service
CompuServe ("CompuServe Navigator")
CompuServe Information Manager ("CIM")
Xerox Star Information System ("Xerox Star")
Apple HyperCard
Trintex/Prodigy

Item/Service
Viewtron

U.S. Patent No. 7,072,849

Prior Art Patents and Patent Applications

Patent Number	Country of Origin	Date of Issue/ Publication
US 4,703,423 (“Bado”)	US	Oct. 27, 1987 (July10, 1984)
US 4,602,279 (“Freeman ’279”)	US	July 22, 1986 (Nov. 29, 1983)
US 4,833,308 (“Humble”)	US	May 23, 1989 (July 24,1986)
US 4,973,952 (“Malec”)	US	Nov. 27, 1990 (Sept. 21,1987)
US 4,575,579 (“Simon”)	US	Mar. 11, 1986 (Dec. 17, 1979)
US 4,775,935 (“Yourick”)	US	Oct. 4, 1988 (Sept.22, 1986)
EP 0,403,232A2 (“Parillo”)	US	Dec. 10, 1990 (June 12, 1990)
US 4,751,578 (“Reiter”)	US	June 14, 1988 (May 28, 1985)
US 5,042,809 (“Richardson”)	US	Aug. 27, 1991 (Nov. 20, 1990)
US 5,220,501(“Lawlor”)	US	June 15, 1993 (Dec. 8, 1989)
US 5,305,195 (“Murphy”)	US	Apr. 19, 1994 (Mar. 25, 1992)
US 5,410,326 (“Goldstein”)	US	Apr. 25, 1995 (Dec. 4, 1992)
US 6,418,556 (“Bennington”)	US	July 9, 2002 (Sept. 9, 1993)
US 3,991,495 (“Wilson”)	US	Nov. 16, 1976 (Dec. 4, 1974)

Prior Art Publications

Title	Date of Publication	Author/Publisher (short cite)
Videotex / Teletext: Principles & Practices	1985	Antone F. Alber, McGraw-Hill, Inc. ("Alber")
"An Information System Based on Distributed Objects"	October 4, 1987	Michael Caplinger, Bell Communications Research ("Caplinger")
CompuServe Navigator User's Guide	January 1988	CompuServe ("CompuServe Navigator")
"Design and Implementation of An Electronic Special Interest Magazine"	August 29, 1986	Gitta B. Salomon, Massachusetts Institute of Technology ("Salomon")
The New Electronic Media "Videotex"	1987	W. Wayne Talarzyk, Lexington Books ("Talarzyk")
"Telesophy"	August 1985	Bruce R. Schatz ("Telesophy 1985")
"Telesophy: A System for Manipulating the Knowledge of A Community"	May 1987	Bruce R. Schatz ("Telesophy 1987")
"IBM, Sears shooting for '88 entry; New life for videotex"	April 6, 1987	Cleveland Horton, Advertising Age ("Trintex 1")
"Trintex Signs up 42 Advertising Clients; Is Hoping for Launch in Early '88, VP Says,"	June 1, 1987	Jerrold Ballinger, DM News ("Trintex 2")
"Big advertisers link to videotext venture"	June 15, 1987	Cleveland Horton, Advertising Age ("Trintex 3")
"Trintex interactive videotext service will feature magazine-type format"	June 22, 1987	Arthur Markowitz, Discount Store News ("Trintex 4")
"Trintex to Aim On-Line Ads At Demographic Segments"	June 30, 1987	The American Banker ("Trintex 5")
"Inside Trintex; Technology & Operations supplement"	September 8, 1987	Women's Wear Daily ("Trintex 6")
"Trintex: Videotex Gets Personalized"	October 12, 1987	David Kiley, AdWeek ("Trintex 7")
"Trintex: Exclusive Status Report"	November 1986	Gary Arlen, Videotex Teletext News, No. 94 ("Trintex 8")
"NAPLPS: Beyond Videotex"	1985	John Vaughan ("Beyond Videotex")
"Interactive Architecture And The Role Of The Designer"	1984	John Vaughan, Videotex Proceedings 1984 ("Interactive

Title	Date of Publication	Author/Publisher (short cite)
		Architecture")
"The Power of NAPLPS: Beyond Videotex"	1985	John Vaughan, Videotex International Proceedings 1985 ("Power of NAPLPS")
"The Communication Studio"	1985	Textup Documentation by John Vaughan ("TextUp")
"The Architecture of Videotex Systems"	1983	Jan Gecsei, Prentice-Hall Inc. ("Gecsei")
"Custom Communications from the Consumer Databanks"	September 1987	Mick O'Leary ("O'Leary")
"Multi-Media Information Services: A Laboratory Study"	June 1988	Judith H. Irven et al. ("Irven")
"Andrew: A Distributed Personal Computing Environment"	March 1986	James H. Morris et al. ("Morris")
"Menlo Corporation's Pro-Search: Review of a Software Search Aid"	January 1986	Barbara Quint ("Quint")
"Foreshadowing Electronic Publishing Age: First Exposures to Viewtron"	December 1985	Tony Atwater et al. ("Atwater")
"Defining Constraints Graphically"	April 1986	Alan Borning ("Borning")
"DVI - A Digital Multimedia Technology"	July 1989	David G. Ripley ("Ripley")
"The Trillium User Design Environment"	April 11986	D. Austin, Jr. Henderson ("Trillium User")
"The Consul/CUE Interface: An Integrated Interactive Environment"	December 1983	Kaczmarek, T. et al. ("Kaczmarek")
"The Computer Sciences Electronic Magazine: Translating from Paper to Multimedia"	May 3, 1992	W. Randall Koons et al. ("Koons")
"KMS: A Distributed Hypermedia System for Managing Knowledge In Organizations"	November 1987	Robert Akscyn, et al. ("Akscyn")
"A Comparison Application Sharing Mechanisms Real-Time Desktop Conferencing Systems"	January 1990	S. R. Ahujaet al. ("Ahuja")
"Reflections on Notecards: Seven Issues for the Next Generation of	July 1988	Frank G. Halasz ("Halasz")

Title	Date of Publication	Author/Publisher (short cite)
Hypermedia Systems"		
"A Tour Through Cedar"	January 1985	Warren Teitelman ("Teitelman")
"An Input-Output Model for Interactive Systems"	April 1986	Mary Shaw ("Shaw")
"Officeaid: An Integrated Document Management System"	January 1984	Allison Lee et al. ("Officeaid")
"The Visi On Operating Environment"	September 1983	William T. Coleman III et al. ("Coleman")
"An Experimental Multi-Media Bridging System"	1988	E.J. Addeo et al. ("Addeo")
"A Multiple, Virtual-Workspace Interface Support User Task Switching"	1987	Stuart K. Card et al. ("Card")
"gIBIS: A Hypertext Tool for TeamDesign Deliberation"	November 1987	Conklin, Jeff et al. ("Conklin")
"A Control Panel Interface Graphics Image Processing Applications"	1987	Gene I. Fisher et al. ("Fisher")
"HDM: A Model for the Design of Hypertext Applications"	December 1991	Franca Garzotto et al. ("Garzotto")
"Enhancing the Usability of an Office Information System Through Direct Manipulation"	December 1983	Allison Lee et al. ("Office Information System")
"Domain Delphi: Retrieving Documents Online"	April 1986	Penny Orwick ("Orwick")
"Teletext and Videotex in the United States: Market Potential Technology Public Policy Issues"	1982	John Tydeman et al. ("Tydeman")
"New Package Rates"	July 7, 1987	Peter Helmer ("IBM-GROUPON10120808")
"Notes from Product Descriptor Meeting"	March 11, 1987	Trintex ("IBM-GROUPON10100828")
"Provider Agreements [Entered] "	July 20, 1987	Thomas Witt ("IBM-GROUPON10102751")
"Reception System Technical Review"	June 1986	Trintex ("IBM-GROUPON10102910")

Title	Date of Publication	Author/Publisher (short cite)
"Trintex Announces First Advertisers"	May 22, 1987	Trintex ("IBM-GROUPON10100493")
"Client Dates"	January 16, 1987	Susan Pechman ("IBM-GROUPON10120750")
"Coldwell Banker Invitation"	March 31, 1987	Bruce E. Bellmare ("IBM-GROUPON10102967")
"Component Level Advertising Descriptor"	January 17, 1986	Steven J. Schimmed ("IBM-GROUPON10103874")
"Dollar Bank, High Level Design"	May 5, 1987	Trintex ("IBM-GROUPON10121898")
"Dreyfus Invitation"	May 13, 1987	Bruce E. Bellmare ("IBM-GROUPON10103255")
"Trintex Product Descriptor"	February 23, 1987	Henry Heilbrunn ("IBM-GROUPON10100766")
"Contract Procedures"	February 27, 1987	Peter Helmer ("IBM-GROUPON10100914")
"Allstate Testing Letter"	May 8, 1987	Glenn Shapiro ("IBM-GROUPON10100910")
"Signed Provider Agreements"	July 8, 1987	Bruce W. Thurlby ("IBM-GROUPON10102738")
"System Architecture Overview"	February 24, 1986	A.M. Wolf ("IBM-GROUPON10120217")
"Visions Document"	April 10, 1987	Henry Heilbrunn ("IBM-GROUPON10120654")
"Viewtron: How to Use"	1983	AT&T ("Viewtron Video")
"Advertising on Videotex: What We've Learned"	1984	Martin Nisenholtz ("Nisenholtz")
"The ITC Project: An Experiment in Large-Scale Distributed Personal Computing"	1984	M. Satyanarayanan ("ITC Project")

Prior Art Systems/Services

Item/Service
CompuServe Navigator
CompuServe Information Manager
TextUp

Item/Service
Telesophy
Trintex/Prodigy

U.S. Patent No. 5,961,601

Prior Art Patents and Patent Applications

Patent Number	Country of Origin	Date of Issue/Publication
US 6,275,821 (Danish)	US	Aug. 14, 2001 (Oct. 14,1994)
US 5,784,562 (Diener)	US	Jul. 21, 1998 (Oct. 10, 1995)
US 6,835,712 (DuFresne)	US	Nov. 10, 1998 (May 3, 1996)
US 5,717,860 (Graber ’860)	US	Feb. 10, 1998 (Sep. 20, 1995)
U.S. 5,708,780 (Levergood)	US	Jan. 13, 1998 (June 7, 1995)
US 5,745,681 (Levine)	US	Apr. 28, 1998 (Jan. 11, 1996)
US 6,230,202 (Lewine ’202)	US	May 8, 2001 (May 1, 1995)
US 5,740,252 (Minor)	US	Apr. 14, 1998 (Oct. 13, 1995)
US 5,715,314 (Payne)	US	Feb. 3, 1998 (Oct. 24, 1994)
US 6,249,291 (Popp)	US	June 19, 2001 (Sep. 22, 1995)
US 6,141,666 (Tobin)	US	Oct. 31, 2000 (Jan. 22, 1996)
U.S. 6,016,484 (Williams)	US	Jan. 18, 2000 (Apr. 26, 1996)
US 5,712,979 (Graber ’979)	US	Jan. 27, 1998 (Sept. 20, 1995)
US 5,740,430 (Rosenberg)	US	Apr. 14, 1998 (Nov. 6, 1995)
US 5,752,022 (Chiu)	US	May 12, 1998 (Aug. 7, 1995)
US 5,768,581 (Cochran)	US	June 16, 1998 (May 7, 1996)
US 5,784,565 (Lewine ’565)	US	July 21, 1998

Patent Number	Country of Origin	Date of Issue/Publication
		(Feb. 5, 1997)
US 6,092,199A (Dutcher)	US	July 18, 2000 (July 7, 1997)

Prior Art Publications

Title	Date of Publication	Author/Publisher (short cite)
"Collaborative Ontology Construction for Information Integration"	1995	Adam Farquhar, Richard Fikes ("Farquhar")
"World-wide algorithm animation"	1994	Bertrand Ibrahim, Computer Networks and ISDN Systems, 27, (1994), pp. 255-265. ("Ibrahim")
"Translation Servers: Gateways Between Stateless and Stateful Information Systems"	1994	Louis Perrochon, Network Services Conference. 1994 ("Perrochon")
"Organizational Management System in an Heterogeneous Environment – A WWW Case Study"	January 31, 1995	Alberto Rodrigues Da Silva, Jose Borbinha, The International Federation for Information Processing ("Da Silva")
"The World Wide Web and Emerging Internet Resource Discovery Standards for Scholarly Literature"	Spring 1995	Stuart Weibel, Library Trends, Vol. 43, No. 4 ("Weibel Library Trends")
"An architecture for Scholarly Publishing on the World Wide Web"	1995	Stuart Weibel et al., Computer Networks and ISDN Systems 28 ("Weibel Architecture")
"Web*-A Technology to Make Information Available on the Web"	April 1995	Almasi et. al, Proceedings of the Fourth Workshop on Enabling Technologies: Infrastructure for Collaborative Enterprises ("Almasi")
"DynaWeb: Interfacing large SGML repositories and the WWW"	December 12, 1995	Gavin Thomas Nicol ("Nicol")
"The Age of the Customized Web Site"	December 1996	Hayato Yoshida ("Yoshida")

Title	Date of Publication	Author/Publisher (short cite)
"Techniques for Server-Side Dynamic Generation"	September 1994	Thomas Boutell et al. ("Boutell")
"The Zweb W3 Gateway"	July 1995	Eric P. Kasten et al. ("Kasten")
"Using the Web to Provide Private Information -or- Password Protection Without Modifying Clients"	May 1994	Bjorn N. Freeman-Benson ("Freeman-Benson")
"Interactive Information Services Using World-Wide Web Hypertext"	April 20, 1994	Steve Putz ("Putz")
"WWW Talk Mailing List"	January 1995	Robert S. Thau et al. ("WWW-Talk")
"From User Access Patterns to Dynamic Hypertext Linking"	February 5, 1996	Tak Woon Yan et al. ("Yan")
HTML and CGI Unleashed	1995	John December et al., Sams.net publishing ("Unleashed")
HTML and CGI Unleashed (Contents of CD)	1995	John December et al., Sams.net publishing ("Unleashed CD")

Prior Art Systems/Services

Item/Service
Online Computer Library Center (OCLC) Electronic Journals Online WWW Gateway ("OCLC Gateway")
West Virginia University Concurrent Engineering Research Center WebStar System ("Webstar")

U.S. Patent No. 7,631,346

Prior Art Patents and Patent Applications

Patent Number	Country of Origin	Date of Issue/ Publication
US 6,115,040 ("Bladow")	US	Sept. 5, 2000 Sept. 24, 1998)
US 7,877,492 ("Chawla '492")	US	Jan. 25, 2011

Patent Number	Country of Origin	Date of Issue/ Publication
		(Feb. 26, 2004)
US 6,826,696 (“Chawla ’696”)	US	Nov. 30, 2004 (July 26, 2000)
EP 1 089 516 (“Doshi”)	EPO	Apr. 4, 2001 (Sept. 20, 2000)
US 6,092,199 (“Dutcher”)	US	July 18, 2000 (July 7,1997)
US 7,137,006 (“Grandcolas”)	US	Nov. 14, 2006 (Sept. 22,2000)
US 7,610,617 (“Kelly”)	US	Oct. 27, 2009 (Dec. 22,2004)
US 5,708,780 (“Levergood”)	US	Jan. 13, 1998 (Jun. 7,1995)
US 7,680,819 (“Mellmer”)	US	Mar. 16, 2010 (Sep. 27,2000)
US 6,959,336 (“Moreh”)	US	Oct. 25, 2005 (April 7,2001)
US 6,421,768 (“Purpura”)	US	July 16, 2002 (May 4,1999)
2004-302907 (“Sunada”)	Japan	Oct. 28, 2004 (Mar. 31, 2003)
US 2004/0205176 (“Ting”)	US	Oct. 14, 2004 (Mar. 21, 2003)
US 2002/0156905 (“Weissman”)	US	Oct. 24, 2002 (Feb. 21,2001)
US 2003/0149781 (“Yared”)	US	Aug. 7, 2003 (Dec. 3, 2002)
US 5,550,981A (“Bauer”)	US	Aug. 27, 1996 (June 21, 1994)
WO 02/13,114A1 (“Sullivan”)	US	Feb. 14, 2002 (July 27, 2001)

Prior Art Publications

Title	Date of Publication	Author/Publisher (short cite)
“Federated Identity Management: Managed Beta Program”	2003	IBM (“FIM”)
“Give Me Liberty . . . ”	June 1, 2003	Jeffrey Harris (“Harris”)
“Shibboleth-Architecture DRAFT v05”	May 2, 2002	Marlena Erdos (“Erdos”)

Title	Date of Publication	Author/Publisher (short cite)
"Novell Debuts New digitalme 'In- the-Net' Service"	October 5, 1999	Novell, Inc. ("In the Net")
"The Human Face of NDS"	August 1, 1999	Carrie Oakes ("Oakes")
"Dynamic Creation and Management of Runtime Environments in the Grid"	September 6, 2003	Kate Keahey, et al. ("Dynamic Creation")
"From Sandbox to Playground"	November 8, 2004	Kate Keahey et al. ("Sandbox")
"Virtual Organisations in Computer Grids and Identity Management"	January-March 2004	Demchenko, Yuri ("Demchenko")
"Walden: A Scalable Solution for Grid Account Management"	November 8, 2004	B Kirschner et al. ("Kirschner")
"The PRIMA Grid Authorization System"	March 18, 2005	Markus Lorch et al. ("PRIMA")
"Privilege Management and Authorization in Grid Computing Environments"	April 16, 2004	Markus Lorch ("Privilege Management")
"Access Control Based on Attribute Certificates for Medical Intranet Applications"	March 17, 2001	Ioannis Mavridis et al. ("Mavridis")
"Ping Identity Corp. Document SID2-5"	July 21, 2004	Ping Identity Corp. ("Ping Identity")
"An Online Credential Repository for the Grid: MyProxy"	August 7, 2001	Jeff Novotny et al. ("Novotny")
"Liberty ID-FF Architecture Overview"	Undated	Thomas Wason et al eds. ("Liberty Alliance Specification")
"Liberty ID-FF Bindings and 962 Profiles Specification, version 1.2-errata-v2.0"	September 12, 2004	Scott Cantor et al. eds. ("Bindings and Profiles")
"Liberty ID-FF Protocols and Schema Specification, version 965 1.2-errata-v3.0"	December 14, 2004	Scott Cantor et al. eds. ("Protocols and Schema")
"Liberty ID-FF Authentication Context Specification, version 1.3"	December 14, 2004	Paul Madsen ed. ("Madsen")
"LibertyMetadata Description and Discovery Specification, version	December 14, 2004	Peter Davis ed. ("Davis")

Title	Date of Publication	Author/Publisher (short cite)
1.1"		
"Liberty Technical Glossary, version 1.4"	December 14, 2004	Jeff Hodges ed. ("Hodges")
"Liberty ID-FF Implementation Guidelines, version 1.2"	April 18, 2004	Peter Thompson et al eds. ("Thompson")
"Bindings and Profiles for the OASIS Security Assertion Markup Language (SAML), version 1.1, OASIS Standard"	September 2, 2003	Eve Maler et al. eds. ("Maler")
"Uniform Resource Locators (URL), RFC 1738"	December 1994	T. Berners-Lee et al. ("RFC 1738")
"Key words for use in RFCs to Indicate Requirement Levels, RFC 2119"	March 1997	S. Bradner ("RFC 2119")
"HTTP State Management Mechanism, RFC 2965"	October 2000	D. Kristol et al. ("RFC 2965")
"Hypertext Transfer Protocol – HTTP/1.1, RFC 2616"	June 1999	R. Fielding et al. ("RFC 2616")
"Uniform Resource Identifiers (URI): Generic Syntax, RFC 2396"	August 1998	T. Berners-Lee et al. ("RFC 2396")
"Simple Object Access Protocol (SOAP) 1.1"	May 8, 2000	Don Box et al. ("Box")
HTML and CGI Unleashed	1995	John December et al., Sams.net publishing ("Unleashed")
HTML and CGI Unleashed (Contents of CD)	1995	John December et al., Sams.net publishing ("Unleashed CD")
"Privacy and Security Best Practices, version 2.0"	November 12, 2003	Christine Varney ed. ("Privacy and Security")
"Privacy in Browser-Based Attribute Exchange"	November 21, 2002	Birgit Pfitzmann ("Pfitzmann")

Prior Art Systems/Services

Item/Service
Novell DigitalMe

Each patent-in-suit simply arranges old elements known in the computer field, with each performing the same function it had been known to perform, and yields no more than what one would expect from such an arrangement—the combination is obvious. As apparently interpreted by IBM in its Preliminary Infringement Contentions, the ’967 patent applies generically to any user interface constructed from optionally cached data and the related ’849 patent applies generically to any user interface constructed from optionally cached data where a portion of the user interface displays advertising. The above-identified prior art references use those familiar elements for their primary or well-known purposes in a manner well within the ordinary level of skill in the art. The ’601 patent is directed to a well-understood solution to a well-known problem—maintaining state information in a stateless protocol, particularly HTTP, by embedding state information or information sufficient to identify state in hyperlinks for future requests to the server in communication with a browser. Both the problem and the specific solutions claimed by the ’601 patent were well understood before its invention. The ’346 patent is directed to well-known solutions to the problem of reducing user burdens by offering a single sign-on service to interact with various protected resources on a network. This was a well-developed technological field by the time of the invention of the ’346 patent.

The above-identified prior art references address the same or similar technical issues and suggest the same or similar solutions to those issues as the patents-in-suit. Accordingly, common sense and the knowledge of the prior art, along with its disclosure, render the asserted claims of the patents-in-suit invalid under Section 102 and/or Section 103.

Indeed, methods for creating partitioned user interfaces with menu bars and/or advertising were well known in the art before the '967 patent, as was constructing user interface elements from defined data structures that could be cached and switching between applications. For example, the CompuServe Navigator system was a prior art application that served as the user interface to the CompuServe Information Service. The Xerox Star user interface, well known as a groundbreaking advance in user interfaces—and prior art to the '967 patent—allowed users to switch between applications. Many of the claim limitations of the '967 patent claim basic concepts that were inherent in those and other technologies. The '849 patent adds little to this notion—merely reciting well-known limitations related to display and caching of advertising data, as well as identifying advertising targets by demographic or location. Indeed, much of this information is admitted as prior art. (*See* '849 patent at 2:20-30 (discussing the "conventional manner" of supplying advertising "from a host to a user site"), 10:23-27 (referencing "conventional marketing analysis techniques" for establishing "the user characterizations")).

Methods for maintaining state information by embedding it in hyperlinks, as disclosed in the '601 patent, were also well known and used. For example, U.S. Patent 5,717,860 to Graber et al. discloses a method and apparatus for tracking the navigation path of a user that has been directed to a second site on the World Wide Web from a first site by maintaining navigation history in URLs. And the publication *HTML & CGI Unleashed* was a textbook that described, among other things, maintaining state information as part of the HTTP protocol. Among the many disclosed methods for maintaining state in this reference, one is through the use of state information embedded in URL data, including via use of a CGI query string. The reference also includes sample computer source code that performs the functions of the '601 patent, particularly as interpreted by IBM in its Preliminary Infringement Contentions.

The single-sign-on functionality of the '346 patent was also well known and used before the purported invention. For example, U.S. Patent No. 7,680,819 to Mellmer describes a system for managing digital identity information and the use of an "Autologin service," which "logs a user in with the appropriate credentials when a user browses a web site that requests a username and password." As a further example, Japanese Patent Application Publication No. 2004-302907 to Sunada discloses a system that can automatically generate user account information based on information at a single-sign-on server. IBM itself participated in an industry standards process for single sign-on functionality—the Liberty Alliance Project. Technical specifications published as part of that project describe the purportedly novel aspects of the '346 patent. Further, federated computing environments were well known at the time of the '346 patent and described, for example, in Doshi, Grandcolas, Harris, Moreh, Weissman, and Yared.

Creation of a user account as part of a single sign-on process was also obvious at the time of the '346 patent. Not only were single sign-on solutions well known (*see e.g.* Pfitzmann), but it was also well known that some services were available only to users with a user account (*see e.g.* '346 Patent at 1:28-30). It was also well known that a user account could be created on the fly. For example, Sunada discloses that "[i]f there is no user account, it obtains information regarding the user from the SSO server 1, uses attribute association information in the attribution association database 24 to automatically generate user account information, and registers it in the user account information database 23." A person of ordinary skill in the art would have found it obvious to add an on-the-fly account creation step to known single sign-on solutions because it would have been applying a known technique to a known method to yield predictable results. Indeed, adding on-the-fly account creation functionality to the well-known single sign-on systems would have predictably added the convenience of an automatically-created account without

imposing additional steps or requirements on the user. Furthermore, users would have "expect[ed] that computer systems coordinate their actions so that burdens on the user are reduced." ('346 Patent at 1:25-27). Any creation of an account on the fly would predictably reduce the burden on the user and permit the user to access certain resources that are only accessible to those with an account. Such automation of the account creation process is exactly the type of coordination between computer systems that users would have expected.

It would have also been obvious before the '346 patent to commence creation of a user account prior to retrieving user attribute information for the user as part of the single sign-on operation. For example, Sunada discloses "[i]n a case where S35 determines that the user account does not exist, S36 inquires of the SSO server 1 for remote attribute information in the attribute association information which is housed in an attribute association database 24, like the one shown in Figure 2 for instance, and obtains the information." (Sunada at 31.) Similarly, Pfitzmann discloses multiple requests and responses for attributes, which would have yielded the predictable result of supplying additional information if it is determined that additional information is necessary. It would also have been obvious before the '346 patent to complete creation of the user account after retrieving user attribute information as part of the single sign-on operation. For example, Sunada discloses "[u]pon putting together information necessary for creating the user account in this manner, S39 creates the user account information and registers it with the user account information database 23. With this, in a case where the access state is that of being logged in, the user account information now exists." (Sunada at 35.) Adding such a concluding user account creation operation would allow the account to be created on the fly, which in turn would provide the predictable result of increasing the convenience for the user.

In *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious because a court "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id*. at 418. The Supreme Court rejected the Federal Circuit's prior rigid approach requiring "precise teachings directed to the specific subject matter of the challenged claim," and held instead that the obviousness analysis requires consideration of "ordinary skill and common sense." *Id*. at 418, 421. As the Court explained, "[i]t is common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 402. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art . . . ." *Id*. at 418. The Supreme Court also rejected the view that the prior art references that are combined must address the same problem as the patented invention, stating that "any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide reason for combining the elements . . . ." *Id*.

The references listed above, alone or in combination, contain an explicit and/or implicit teaching, suggestion, motivation, or inference to combine them due to the following: (1) the knowledge generally available to a person of ordinary skill in the art, (2) the prior art references as understood by a person of ordinary skill in the art, (3) the nature of the problem to be solved, (4) the fact that each prior art reference addresses similar problems, (5) the knowledge of those

skilled in the art that the disclosed components had been or could be used to implement various features.

The references related to the ’967 patent all deal with the same technological field: they are related to the construction of user interfaces in a multiple application environment in which the user interface is constructed from data objects that may be stored locally. The references also address issues related to caching and switching between applications. *See, e.g.*, *Caching Hints in Distributed Systems* by Douglas B. Terry; *An Information System Based on Distributed Objects* by Michael Caplinger (“Caplinger”); U.S. Patent No. 4,962,475 (“Hernandez”).

Similarly, the references related to the ’849 patent all deal with the same technological field: they are related to the construction of user interfaces in a multiple application environment in which the user interface is constructed from data objects that may be locally stored and in which advertising information is stored and displayed to users. For example, *Videotex/Teletext: Principles & Practices* by Antone F. Alber describes the state of the art for videotex and teletext systems, the foundational technologies of both the ’967 and ’849 patents, as they existed in 1985. Alber describes the use of videotext for targeted advertising and the use of the NAPLPS protocol to construct user interfaces.

Many of the references for the ’967 patent and the related ’849 patent refer to one another or otherwise contain reasons that a person of ordinary skill in the art would combine them. For example, many of the references use similar language (i.e., “data objects,” “user interface”) to describe the construction and use of interfaces for applications. The references themselves discuss the benefits of applying their disclosures to existing prior art interactive computer systems, including networks, videotext, and so on. Because such similarities, *inter alia*, indicate that these references are all directed to the same or a similar technological field, a person of ordinary

skill in the art would naturally be aware of and combine these similar and well-known teachings of the references.

The references related to the ’601 patent also all deal with the same technological field: maintenance of state information in networked environments that communicate using stateless protocols. These references also address issues related to resuming “conversations” using stored state information. For example, U.S. Patent No. 5,784,562 to Diener et al. describes an electronic document processing system in which a network communication connection between a server and client must be repeatedly re-established and the prior dialog session context re-associated with continued dialog session communications. The HTML & CGI Unleashed reference discloses the use of a CGI program to modify identified hyperlinks to include state information. Indeed, many of the prior art references provide a teaching or motivation to combine them to arrive at the alleged inventions claimed in the patents-in-suit. For example, the references describe both the same problem and similar solutions, and in many instances the same stateless protocol, HTTP. Such similarities indicate these references are all directed to the same or a similar technological field and a person of ordinary skill in the art would naturally be aware of and combine these similar and well-known teachings of the references.

The references related to the ’346 patent also all deal with the same technological field: exchange of user information for single sign-on functionality and the creation of user accounts in a seamless manner in a federated computing environment. Many of the references provide a teaching or motivation to combine them to arrive at the alleged invention of the ’346 patent. For example, the references describe both the same problem and similar solutions, and many use the same language to describe the problems and solutions, such as “automated login,” “single sign-on”, and “identity provider.” Because such similarities, *inter alia*, indicate that these references

are all directed to the same or a similar technological field, a person of ordinary skill in the art would naturally be aware of and combine these similar and well-known teachings of the references.

For all of the patents-in-suit, the identified references, alone or in combination, also contain an explicit and/or implicit teaching, suggestion, motivation, or inference to combine them within the references themselves, as well as within the knowledge of those of ordinary skill in the art. These references identify and address the same technical issues and suggest similar solutions to those issues. Moreover, many of these references cross-reference and discuss one another, providing an explicit motivation to combine such references and further illustrating the close technical relationship among this group of references. Indeed, multiple references were authored or developed by the same person(s) and/or companies. If and to the extent that IBM challenges the applicability of any of these references with respect to particular limitations of the asserted claims of the patents-in-suit, Groupon reserves the right to supplement this disclosure to provide additional explanation for why particular references should and could be combined with one another. Groupon may also rely on expert testimony to establish that the asserted claims of the patents-in-suit are invalid as obvious. [2]

The combinations of references provided in the accompanying prior art reference charts in Exhibits A1-A24, B1-B26, C1-C15, and D1-18 are exemplary and are not intended to be exhaustive. Additional obviousness combinations of the references identified herein are possible, and Groupon reserves the right to use any such combination(s) in this litigation. In particular,

[2] The references identified in this section are only examples of the references that one of ordinary skill in the art would consider to be part of the same body of work and in same technical field and is not meant to be limiting in any way.

Groupon is currently unaware of IBM's allegations with respect to the level of skill in the art and the qualifications of the typical person of ordinary skill in the art. Groupon is also unaware of the extent, if any, to which IBM may contend that limitations of the claims at issue are not disclosed in the prior art identified by Groupon as anticipatory and the extent to which IBM will contend that elements not disclosed in the specifications of the patents-in-suit would have been known to persons of skill in the art. Groupon reserves the right to supplement this disclosure to identify other references that would have made such limitations obvious in view of the relevant disclosures.

B. 35 U.S.C. § 112

As noted below, some of the asserted claims of the patents-in-suit are invalid as indefinite (35 U.S.C. § 112 ¶ 2), lacking a proper written description (35 U.S.C. § 112 ¶ 1), and/or failing to enable one of ordinary skill in the art at the time the invention was made to make or use the alleged invention (35 U.S.C. § 112 ¶ 1). The following identification of claims and claim elements are only exemplary, and Groupon reserves the right to supplement the identification of claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112. Specifically, Groupon reserves the right to identify additional claims and claim elements that do not comply with the requirements of 35 U.S.C. § 112 after the Court construes the claims in this case.

The '967 Patent

Claims 1-17 fail to comply with 35 U.S.C. § 112 ¶ 2 because a person of ordinary skill at the time of the invention would have been unable to distinguish between "applications," under IBM's apparent application of that term.

The phrase "the predetermined plan" in claim 4 fails to comply with 35 U.S.C. § 112 ¶ 2 because it lacks antecedent basis. Claims 4-9 are accordingly indefinite.

The phrase "the navigation procedures includes enabling the user to access a physical analogy of the available applications from which a desired application may be selected" fails to comply with 35 U.S.C. § 112 ¶ 2, rendering claim 8 indefinite.

Claims 1-17 fail to comply with 35 U.S.C. § 112 ¶ 1 in that the specification lacks support for a "computer network" or "network" to the extent that term is construed to encompass a reception system obtaining objects from anything other than a single central host computer.

The '849 Patent

Claims 1, 8, and 14 fail to comply with 35 U.S.C. § 112 ¶ 2 because a person of ordinary skill at the time of the invention would have been unable to distinguish between "applications," under IBM's apparent application of that term.

The terms "structuring applications" and "structuring advertising" fail to comply with 35 U.S.C. § 112 ¶ 1 because the specification fails to describe how applications or advertising may be "structured," at least under IBM's apparent construction.

The phrase "structuring advertising in a manner compatible to that of the applications" fails to comply with 35 U.S.C. § 112 ¶ 2 because, at least based on the apparent construction of this term in IBM's Preliminary Infringement Contentions, it would not be clear to a person of ordinary skill in the art what it takes for the structure of advertising to be "compatible" with that of the applications.

The phrases "advertising object" and "advertising data" fail to comply with 35 U.S.C. § 112 ¶ 2 because, at least based on the apparent constructions adopted in IBM's Preliminary Infringement Contentions, it would not be clear to a person of ordinary skill in the art how to distinguish "advertising object" from "advertising data."

Claims 1-21 fail to comply with 35 U.S.C. § 112 ¶ 1 in that the specification lacks support for a "computer network" or "network" to the extent that term is construed to encompass a reception system obtaining objects from anything other than a single central host computer.

The '601 Patent

The phrase "filtering one of said hyperlinks and data output from said services according to a predetermined criteria" fails to comply with 35 U.S.C. § 112 ¶ 1 because the specification fails to describe how the filtering is performed, at least under IBM's apparent construction.

The phrase "adding one of said hyperlinks and data to said output from said services according to a predetermined criteria" fails to comply with 35 U.S.C. § 112 ¶ 1 because the specification fails to describe how the filtering is performed, at least under IBM's apparent construction.

The phrase "dynamically downloading computer program code to the client to perform said step of embedding which is responsive to said step of communicating the output to the client" fails to comply with 35 U.S.C. § 112 ¶ 1 because the specification fails to describe how the filtering is performed, at least under IBM's apparent construction.

Claim 63 fails to comply with 35 U.S.C. § 112 ¶ 2 because the claim upon which it depends, Claim 60, requires communicating "a response including the continuations and embedded state information" meaning that communicating must occur after the embedding step. Claim 63 states that embedding occurs after (and responsive to) the communicating, which is impossible.

The '346 Patent

The phrase "back-channel information retrieval mechanism" fails to comply with 35 U.S.C. § 112 ¶ 2, rendering claim 8 indefinite.

C. 35 U.S.C. § 101

The asserted claims of the ’967 patent are invalid under 35 U.S.C. § 101 for failure to recite patentable subject matter. Groupon incorporates by reference its arguments presented in the briefing for its motion for judgment on the pleadings. (D.I. 29, 39.) The asserted claims of the ’849 patent are invalid under 35 U.S.C. § 101 for failure to recite patentable subject matter. Groupon incorporates by reference its arguments presented in the briefing for its motion for judgment on the pleadings. (D.I. 29, 39.) Depending on the Court’s claim constructions in this case, on IBM’s positions yet to be developed in this case, and on the *Priceline* case, the asserted claims of the ’601 patent and the asserted claims of the ’346 patent may also be invalid under 35 U.S.C. § 101 for failure to recite patentable subject matter.

II. ACCOMPANYING DOCUMENT PRODUCTION

Groupon is producing invalidating prior art references and corroborating evidence concerning prior art systems, including the prior art references described in this document and the attached exhibits. These prior art references and corroborating evidence are cited in and support the provided invalidity claim charts.

Groupon’s search for prior art references, methods, systems, additional documentation, and/or corroborating evidence concerning prior art systems is ongoing. Accordingly, Groupon reserves the right to continue to supplement its production as Groupon obtains additional prior art references, documentation, and/or corroborating evidence concerning invalidity during the course of discovery. Groupon may further supplement its production once IBM complies with its discovery obligations, as described above.

Dated: February 22, 2017

Of counsel:

J. David Hadden
Email: dhadden@fenwick.com
Saina S. Shamilov
Email: sshamilov@fenwick.com
Phillip J. Haack
Email: phaack@fenwick.com
Adam M. Lewin
Email: alewin@fenwick.com
FENWICK & WEST LLP
801 California Street, 12th Floor
Mountain View, CA 94041
Telephone: 650.988.8500
Facsimile: 650.938.5200

By: /s *Phillip J. Haack* (admitted pro hac vice)
Phillip J. Haack

John G. Day (#2403)
Ashby & Geddes, P.A.
500 Delaware Avenue, 8th Floor
P.O. Box 1150
Wilmington, DE 19899
(302) 654-1888
jday@ashby-geddes.com

Counsel for Defendant
GROUPON, INC.

EXHIBIT 3

PUBLIC VERSION

THIS EXHIBIT HAS BEEN REDACTED IN ITS ENTIRETY

EXHIBIT 4

Robert Harrits

From: Jessica Benzler <jbenzler@fenwick.com>
Sent: Friday, May 5, 2017 4:47 PM
To: Robert Harrits
Cc: Phillip Haack; David Hadden; Adam Lewin; jday@ashby-geddes.com; bpalapura@potteranderson.com; IBM Groupon Service; dmoore@potteranderson.com; Groupon_IBM_Service@Fenwick.com; Saina Shamilov; Karim Oussayef
Subject: RE: Groupon-IBM (Del.)

Follow Up Flag: Follow up
Flag Status: Completed

Robert,

I have uploaded two zip folders containing (1) a supplemental production of prior art and (2) five corrected exhibits to Groupon's preliminary invalidity contentions to our FTP site. Instructions for accessing those folders are provided below. Please let me know if you have any difficulty retrieving the documents.

Groupon is still working to amend its obviousness combination charts to include pinpoint citations to the art for references for which complete charts were not previously provided, and will provide those updated charts next week.

I can confirm that a Linux machine will be available for use during Monday's code review.

Best,
Jessica

JESSICA BENZLER
Fenwick & West LLP
Associate, Litigation Group
(650) 335-7279
(415) 281-1350
jbenzler@fenwick.com

FTP Information:
Host: securefile.fenwick.com
Port: 22
Server Type: SFTP
Log on type: normal
Username: groupon_ibm_oppcounsel
Password: 7hYfr/TA+U(ac{:/

FTP Instructions:

[redacted]

From: Robert Harrits [mailto:RHarrits@desmaraisllp.com]
Sent: Wednesday, May 03, 2017 3:28 PM
To: Jessica Benzler <jbenzler@fenwick.com>
Cc: Phillip Haack <phaack@fenwick.com>; David Hadden <DHadden@fenwick.com>; Adam Lewin <alewin@fenwick.com>; jday@ashby-geddes.com; bpalapura@potteranderson.com; IBM Groupon Service <IBMGrouponService@desmaraisllp.com>; dmoore@potteranderson.com; Groupon_IBM_Service@Fenwick.com; Saina Shamilov <sshamilov@fenwick.com>; Karim Oussayef <KOussayef@desmaraisllp.com>
Subject: RE: Groupon-IBM (Del.)

Jessica,

I write to follow up on your April 24, 2017 letter regarding Groupon's preliminary invalidity contentions and my April 28, 2017 letter regarding Groupon's production of source code.

First, your April 24, 2017 letter stated that Groupon would need an additional week beyond IBM's requested supplementation date of April 21, 2017 to update its contentions and produce missing prior art. An additional week has passed and IBM still has not received Groupon's updates or production. Can you please let us know when we can expect Groupon to correct the issues IBM identified with Groupon's invalidity contentions?

Second, my April 28, 2017 letter re-requested Groupon produce source code that was originally requested in Elizabeth Kimmel's February 14, 2017 letter, produce additional source code that IBM identified as relevant, and provide our

expert with a computer that is able to read the source code in the iOS project. Can you please let us know whether Groupon has produced the requested source code or will produce the code before IBM's source code reviewer returns on Monday May 8, 2017? As I mentioned to Sapna during our call this morning it would be particularly helpful if a Macintosh or Linux machine could be made available for use with the iOS project source code. Can you please let us know if such a machine will be available on Monday?

Thank you,
Robert

From: Jessica Benzler [mailto:jbenzler@fenwick.com]
Sent: Monday, April 24, 2017 5:21 PM
To: Robert Harrits
Cc: Phillip Haack; David Hadden; Adam Lewin; jday@ashby-geddes.com; bpalapura@potteranderson.com; IBM Groupon Service; dmoore@potteranderson.com; Groupon_IBM_Service@Fenwick.com; Saina Shamilov; Karim Oussayef
Subject: RE: Groupon-IBM (Del.)

Robert,

Please see the attached letter.

Best,
Jessica

JESSICA BENZLER
Fenwick & West LLP
Associate, Litigation Group
(650) 335-7279
(415) 281-1350
jbenzler@fenwick.com

From: Robert Harrits [mailto:RHarrits@desmaraisllp.com]
Sent: Monday, April 24, 2017 1:10 PM
To: Jessica Benzler <jbenzler@fenwick.com>; Karim Oussayef <KOussayef@desmaraisllp.com>
Cc: Phillip Haack <phaack@fenwick.com>; David Hadden <DHadden@fenwick.com>; Adam Lewin <alewin@fenwick.com>; jday@ashby-geddes.com; bpalapura@potteranderson.com; IBM Groupon Service <IBMGrouponService@desmaraisllp.com>; dmoore@potteranderson.com; Groupon_IBM_Service@Fenwick.com; Saina Shamilov <sshamilov@fenwick.com>; Groupon_IBM_Service@Fenwick.com
Subject: RE: Groupon-IBM (Del.)

Counsel,

I write to follow up on my correspondence from ten days ago regarding issues with Groupon's Invalidity Contentions. We requested a response by Friday, April 21, 2017, but have not heard from you. Can you please let us know when we can expect a response?

Regards,
Robert

From: Robert Harrits
Sent: Thursday, April 13, 2017 3:14 PM
To: Jessica Benzler; Karim Oussayef
Cc: Phillip Haack; David Hadden; Adam Lewin; jday@ashby-geddes.com; bpalapura@potteranderson.com; IBM Groupon Service; dmoore@potteranderson.com; Groupon_IBM_Service@Fenwick.com; Saina Shamilov; Groupon_IBM_Service@Fenwick.com
Subject: Groupon-IBM (Del.)

Counsel,

Please see attached correspondence.

Regards,
Robert

Robert C. Harrits | Desmarais LLP
230 Park Avenue | New York, NY 10169
Tel: (212) 808-2946 | Fax: (212) 351-3401
Email: rharrits@desmaraisllp.com

This email may contain confidential and privileged material for the use of the intended recipient. Any review, use, or distribution by anyone other than the addressee is strictly prohibited. If you are not the intended recipient, please contact the sender by reply email and delete all copies of this message.

EXHIBIT 5

FILE HISTORY

US 5,961,601

PATENT:	5,961,601
INVENTORS:	Iyengar, Arun K.
TITLE:	Preserving state information in a continuing conversation between a client and server networked via a stateless protocol
APPLICATION NO:	US1996660633A
FILED:	07 JUN 1996
ISSUED:	05 OCT 1999
COMPILED:	30 OCT 2014

DATE OF DEPOSIT: JUNE 7, 1996

FORM PTO-1449 (Modified)	ATTY. DOCKET NO.	SERIAL NO.
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT	YO996-090	To be assigned 08/660,532
	APPLICANT: Arun Iyengar	
(Use several sheets if necessary)	FILING DATE: Herewith	GROUP: 2756

REFERENCE DESIGNATION U.S. PATENT DOCUMENTS

EXAMINER INITIALS		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE (IF APPRO.)
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION YES	TRANSLATION NO
	AL							
	AM							
	AN							
	AO							
	AP							

OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)

DR	J. Postel and J.K. Reynolds, "File Transfer Protocol (FTP)", RFC 959, Information Sciences Institute, USC, October 1985	
	http://ds.internic.net/std/std9.txt	
DS		
DT		

EXAMINER	DATE CONSIDERED
[signature]	3/27/98

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(4)

Behind the scenes

What exactly is involved in taking an ancient text-adventure game and bringing it to the World Wide Web? You'll be surprised!

I find myself writing this page both for my own reference and for all you techies out there. Besides, it'll probably cut down on all the "How did you do [xxx]?" messages I'm bound to get. Nontechnical readers should stop after the first section. This one's gonna be long...

History

As weird as it may seem, I'm actually quite a novice at CGI programming, or at least I was when I started this whole affair. My first CGI script did nothing when activated, and the idea for this script wasn't even mine to begin with, so I can hardly take credit for it. I also have a fortune server, but it just relies on the **fortune** program, and it was based on a primitive version that shipped with my Linux distribution. Not much in the way of challenging work, either.

I set out to try my hand at something that would be both challenging and rewarding, i.e. something non-trivial that hadn't been implemented by a dozen people already. I'm not sure how **adventure** entered into the picture, but after giving it a little thought, I concluded that it was probably doable without spending horrible amounts of time on it. I did some Internet searches to see if someone else had thought up the idea, but I came up empty. Frankly, I was surprised that no one had done something like this before, but it didn't take me long to see why...

Porting the code

Adventure has been a part of the BSD UNIX distribution for some time, though recent systems usually don't ship with games. *sob* The C source code for **adventure** is a part of the bsd-source distribution and can be easily obtained at any FreeBSD or NetBSD FTP site.

Since I run my HTTP server under Linux, I originally looked for a Linux port first, but found nothing. With a few Makefile tweaks, I got the game to build, but I also got some odd bfd assertion fail messages from gcc. Not only that, but the game dumped core when I tried to run it. Apparently, the source code has lots

http://tjwww.stanford.edu/adventure/impl.htm/

of variables *defined* (not declared) in a commonly-included header file. This seemed to be just dandy with the BSD systems I tried it on, but *gcc* choked on this code.

I moved all the external variables (and there were *lots* of them) to a single object file, but it still coredumped. After some experimentation, I discovered that the -fno-common option to gcc caused it to compile all the global storage into the data section (**D**) rather than the so-called "common" (**C**) section, and this cleared up the problem. I have the Linux executable up for FTP if anyone wants to wax nostalgic on his or her own Linux box.

State propagation

CGI is, by its very nature, a *stateless* protocol, which means that neither the Web server nor the browser keeps any information from one request to the next. While this is just fine for static pages and one-shot scripts, it is the bane of interactive Web game programmers, since games generally take a number of turns to play, and it is necessary to maintain information about the state of the game from one turn to the next.

There are several different ways of dealing with this problem. One approach is to implement your "game" as a bunch of crosslinked HTML documents, letting your current page be your state information. Andrew Daviel's adventure uses this approach. This works fine if your game can be represented as a sufficiently small FSM, but most interesting interactive games are far more complex. Even **adventure**, if you bothered to enumerate all possible game states, would require an FSM of astronomical size.

Another way to keep state information around is to maintain temporary files on the server side and just give the browser back some unique ID string or number on each page so that the CGI program knows which "session" to recall. Yuval Fisher's adventure uses this strategy and really does provide an interface to the actual game. While you no longer restrict yourself to an FSM topology (Turing, anyone?), this still poses some problems, like what to do with old temp files. Cleaning them out by hand is a real waste of time, and having a **cron** job do the work inevitably leads to some poor schmuck's winning game being deleted because he couldn't stay up all night to finish playing and keep the file current. In the meantime, you still have to store the files on disk, which takes up space; lots of small files consume space *fast* on a server. Then there's the problem of making sure you don't start poking around and find someone else's game and start playing it for them - or vice versa.

This leaves the third method: encode the game's state within the URL, usually as part of the path information or the query string. This is the most popular method, because it allows you to implement fun and useful games while avoiding the problems associated with keeping files on disk locally. This is also the most difficult to implement, because you now need to figure out a way to represent your game's state as a short string and use that string to recover state information on the next turn. Most current interactive Web games like Othello, Tic-Tac-Toe, and Minesweeper use this technique, though no Adventure games used it. A Tic-Tac-Toe game, for example, might use a URL like /cgi-bin/ttt?x-xo--ox- to represent the layout of X's and O's on the board.

The advanced users among you are probably asking, "Hey, what about Netscape 'cookies'?" Sure, they seem like a slightly more elegant solution to this problem, but as you might have seen on my server home page, I absolutely refuse to use Netscape extensions on my pages. I want anybody with Web access to be able to play the game, regardless of which browser they use. Even Lynx users should find this game enjoyable without the graphics. Yes, the icons all have "ALT" tags on them.

Why are Adventure Web URLs so incredibly long?

Those enormous URLs you see while playing the game are a direct result of such a state encoding scheme in action. Originally, I thought that **adventure** would be like all the other games, with relatively

little state information, like your location and possessions, to carry around. In reality, the game dumps over 3000 bytes of data to disk when you save a game! By contrast, think about how state-economical other games tend to be. For example, there is Tic-Tac-Toe (3 bytes), Othello (16 bytes), checkers (16 bytes), and chess (72 bytes). Even with the final version of the state-encoding algorithm, URLs can reach hundreds of bytes late in the game. The problem is even worse when you realize that you can only use a subset of possible 8-bit values in a valid URL if you want it to stay unmangled in transit.

The first order of business was to reduce the amount of data being kept around. The original code was very cavalier in its data allocation, using ints for everything, even if they were boolean values. After trimming the "fat" and removing unused variables from the set of saved data, I managed to reduce the amount of state information to just under 1000 bytes. Even that was still pretty big - too big for a reasonable URL - but I noticed that the game had to keep information on item locations, the status of items and dungeon features, and the state of other entities within the dungeon, all of which could potentially change during the course of a game.

Differential encoding and Base64

To reduce the size of the state information, I noticed that while most of the variables comprising the game state *could* change during the course of a game, they usually had "default" values that rarely changed except in some unusual circumstance. By encoding only the differences between the current game state and some predefined "baseline" state, I theorized that I could reduce the amount of information that I had to stuff into a URL.

The other issue with using URLs to transmit information is that you are effectively limited to the text portion of the character set. Unprintable characters and characters with special meanings might be mangled in transit, at worst, or escaped (%nn notation). The former is unacceptable, the latter just makes your URL even longer than it already is. A convenient and popular way of mapping arbitrary byte values onto printable strings is known as *Base64*. Pick 64 printable characters - most people use the alphanumerics plus two other characters. I chose **A-Z**, **a-z**, **.**, and **-**, as you can tell by looking at my URLs. Since a character set of size 64 only gives you six bits of information, you take the byte-oriented datastream and divvy it up into 6-bit chunks using bit operators. Each 6-bit chunk can then be translated into a printable character. Three bytes of arbitrary data encode into four base64 characters, since they are both 24 bits, and so on.

After examining the properties of the saved game data, I developed a simple encoding algorithm for representing differences. For every state byte in the current game that has changed from the baseline, I store an **(offset,value)** pair, where **offset** is a pointer to the changed byte and **value** is the new value of the byte in question. The game state data contains just under 1000 bytes, so a pointer to a specific byte only requires 10 bits to store. Since a byte uses up 8 bits, each pair requires exactly 18 bits to store; this fits into 3 base64 characters exactly with no wasted space.

This is why the length of the state information string in your URLs is always a multiple of three. Each triplet of characters encodes a one-byte change in the game state. If you are deep into a game, you've probably made a mess of the dungeon, moving things around and changing the state of the cave, in addition to altering your own attributes. All these state changes result in more information that has to be kept around from move to move. It is not uncommon to have URLs over 200 characters long, and they do tend to get longer rather than shorter as you progress. Although the string may be a bit unwieldy, all of the browsers I've used seem to handle it just fine. If yours doesn't, though, I'd certainly appreciate hearing about it.

Making the game re-entrant

With the state-encoding algorithms in place, the next obstacle was changing the standard I/O interface

that **adventure** uses into a state-based interface. To run as a CGI process, the program had to accept its starting state, encoded as described above, as well as the player's next move, print any game-related messages, and dump out its new state in the form of an HTML document. The hardest part was making enough sense of the source code to identify where to add the appropriate code to print out state information and terminate the program after a single turn.

Every time the adventure CGI script is activated, it invokes the modified **adventure** executable, passing it the "query string" (the part of the URL after the **?**, usually used for searches). The executable first performs a "restore" on a previously-saved "baseline" game to establish a fixed game state. It then decodes the state string given to it from the client and uses it to reconstruct the user's game. (It also performs checks to determine if the user tried to cheat; more on that later). With the game properly restored, it extracts the player's next move and hands off control to the game engine, which handles the move and prints out any necessary messages. When control returns to the beginning of the command loop, it is intercepted by a code fragment that takes a snapshot of the new state of the game, back-inserts it into all the links with the help of an output post-processor, and terminates the program. In effect, the game performs a restore-move-save every time you make a move, using the URL as the equivalent of a save file.

The repeated file read that the game does upon startup is not particularly efficient. One of the ways to alleviate this problem would be to have the game dump its state to a new executable after performing the initial load, a la GNU Emacs.

The original version of the output post-processor was a shell script. Since it forked off three sed processes to do its string manipulation, it placed considerable load on the server when several users tried to play the game at once. I have since rewritten the script in Perl, yielding far superior performance, since only a copy of perl and a copy of the executable game core need to be executed for each move.

Generating HTML output

Now that **adventure** was able to interact and maintain state properly through CGI, I started looking at ways to spruce up the old text-based interface. I wanted to do more than give users a little text box where they had to type in all their commands. While that interface was what gave the original game some of its charm, it gets rather annoying over the Web, since one generally has to move the mouse or cursor over to the text window before typing. With that kind of a setup, it would probably be more fun just to play the real thing at your own computer.

To make the Web interface worth playing, I decided to concentrate on the simple commands that are used most frequently. My first idea was to add a directional "keypad", so that users could just click on a button icon to move about the dungeon. Also, players generally do quite a bit of picking up and dropping of items, so I had the game engine generate links to loose items lying around so that clicking on them would cause the user to pick them up. The game checks to make sure an item can in fact be picked up before it highlights it. Likewise, clicking on an item already in your inventory drops it. While playing the original game, I also frequently used commands like inventory, look, and score to see how I was doing. Since each move generates a new HTML page anyway, I decided to display the full description of the current location, along with the full inventory list and score, so that users wouldn't be bothered with these mundane concerns. Another enhancement I thought of after implementing the first two was the idea of searching for directional keywords in room descriptions and generating corresponding links to them.

Links and forms

For standard buttons and directional keywords, generating links is fairly simple. All the code needs to do is capture the final state of the game and insert it in each href for each button, along with the proposed command. When the link is selected, it will invoke the CGI script with the new game state, and the

one-time command loop will handle the new command. This also works for item take/drop commands and directional words. The little text box at the bottom of the page is just a standard form with the text field specifying your command and a hidden field carrying the current state information.

More difficult to implement were the occasional yes/no questions the game would ask. Since **adventure** normally read from a tty, all it needed to do was prompt you, read your response, and change the game state before returning to the main loop. Unfortunately, I couldn't just suspend and restart the game at the point the question was asked, since it wasn't in the main loop. Instead, I used additional state variables and generated different snapshots corresponding to the "yes" and "no" buttons - I changed the state of the game to what it would be if the user had selected "yes", generated a link, and did the same for the "no" button.

Cheaters beware!

The original designers of **adventure** were worried, perhaps rightfully so, about people who would try to "break" the game, either by savefile abuse, running strings on the executable, or even using a core reader. To prevent the secrets of the game from being revealed so easily, the code encrypted both its in-memory string data and its savefiles. For savefiles, the game also threw in a simple checksum to ensure both encryption and data integrity.

Although players cannot access the executable or examine the contents of the memory of a CGI process while using the Web, they do have access to the URL, which is the equivalent of a savefile. Since the Adventure Web also maintains a high score list, it is important to protect it from abuse by random users and from people who just want to be at the top of the list without playing the game. To bring security to the Web, I set up the URL encoding algorithm to ride on top of the encryption routines already present in the original code. Whenever the game receives a URL, it runs it through the checksum algorithm in the same way that the original game processed savefiles to ensure that the data was not tampered with. If the checksum doesn't match up, the game displays a message to that effect and refuses to display a page to the user. It is highly unlikely that any random modification to a valid URL will produce one that will also be accepted as valid.

In addition to the standard encryption and checksum, the game also runs the data used to generate each URL through an additional cipher (the details of which I won't divulge here) using the originating IP address as a key. This makes the code harder to break, and it also prevents URLs from being shared between machines. I did this because the high scores list also allows only one score entry per IP address. By combining these two restrictions, it is essentially impossible to add entries onto the high score list without playing the game and earning each one. If you finish a game and receive a form for the high score list, you'll notice that the form also contains an authenticated state string in its hidden field. This string has a special flag set to allow you to make an entry onto the high score list, and it is valid only from the same IP address from which the form was generated, just like any other game URL. Since you must beat your personal best to get on the high scrore list, a form may only be submitted once. To change your entry, you need to increase your score and have a new form generated. I suspect that it would be easier to win the game than it would be to break the URL encoding.

Since the game was first made available to the public, I have received quite a bit of email from people who have experienced difficulty with my IP encoding scheme. Most were from people surfing the Web from service providers or networks that caused their IP addresses to change between sessions or worse, between HTTP requests. To allow such users to play the game without compromising the authentication features and scorefile protection, I added an additional field to the game URL. The ip= field contains the IP address from which the game was started, and it keeps its value regardless of where the URL is referenced. Since the state string and IP address are now kept together, the game can always decode a URL regardless of where it was generated. However, if the HTTP request is coming from a different IP address than the one specified in the URL, the game will notify the player that the current game is

ineligible for the high scores list. In other words, you can now move URLs from host to host, but they will only count when you play them from the original host.

I guess that pretty much summarizes the inner workings of Adventure on the Web. If you still have any questions or comments, feel free to email me at tjw@leland.stanford.edu. In the meantime, enjoy your adventure!

 *Go back to Adventure Web*

EXHIBIT 6

US006016484A

United States Patent [19]

Williams et al.

[11] Patent Number: 6,016,484

[45] Date of Patent: Jan. 18, 2000

[54] **SYSTEM, METHOD AND ARTICLE OF MANUFACTURE FOR NETWORK ELECTRONIC PAYMENT INSTRUMENT AND CERTIFICATION OF PAYMENT AND CREDIT COLLECTION UTILIZING A PAYMENT**

[75] Inventors: **Humphrey Williams**, Palo Alto; **Kevin Hughes**, San Mateo; **Bipinkumar G. Parmar**, Cupertino, all of Calif.

[73] Assignee: **VeriFone, Inc.**, Santa Clara, Calif.

[21] Appl. No.: **08/639,880**

[22] Filed: **Apr. 26, 1996**

[51] **Int. Cl.**[7] **G06F 17/60**

[52] **U.S. Cl.** **705/39**; 235/375; 235/380; 345/326; 705/26

[58] **Field of Search** 705/26, 27, 39, 705/1; 380/23, 24; 235/375, 380, 381; 340/825.3, 825.35; 345/326, 333, 334, 340

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,651,511	3/1972	Andrews et al.	340/324
3,956,615	5/1976	Anderson et al.	235/61.7 B
4,277,837	7/1981	Stuckert	364/000
4,303,904	12/1981	Chasek	340/23
4,305,059	12/1981	Benton	340/825.33

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

0 172 670 A2	2/1986	European Pat. Off. .
0 256 768 A2	2/1988	European Pat. Off. .
0 256 768 A3	2/1988	European Pat. Off. .
0 326 699	8/1989	European Pat. Off. .
0 363 122 A2	4/1990	European Pat. Off. .

(List continued on next page.)

OTHER PUBLICATIONS

Warr, Michael. "Business Wants Telecom of the Future — Today," Telephony'SUPERCOMM Wrap—up, pp. 12–3, Apr. 1991.

Müller, R., "Lon—Das Universelle Netzwerk, Teil 1," Elektronik., vol. 40, No. 22, Oct. 29, 1991, Munchen De, pp. 59–69, XP000268228.

Snow, C.R. et al.: "Simple Authentication" Software Practice & Experience., vol. 24, No. 5, May 1994, Chichester Gb, pp. 437–447, XP0006555455, p. 440–441.

Stallings, W. "Data and Computer Communications", 1994, MacMillan Publishing Co., New York, US, XP002069639, pp. 636–644, 663–666.

Anderson, R. et al. "NetCard –a Practical Electronic—cash System." International Workshop Proceedings, Security Protocols. International Workshop, Cambridge, UK, Apr. 10–12. p. 49. XP00203977.

(List continued on next page.)

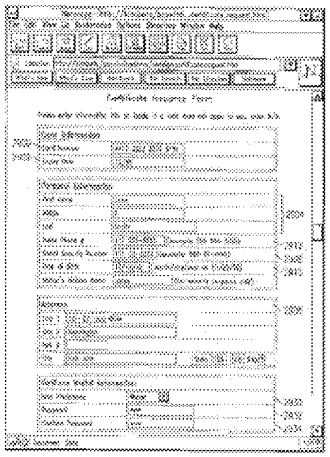
Primary Examiner—Edward R. Cosimano

Attorney, Agent, or Firm—Gardere & Wynne, L.L.P.; Sanford E. Warren, Jr.; Daniel J. Chalker

[57] **ABSTRACT**

An electronic monetary system provides for transactions utilizing an electronic-monetary system that emulates a wallet or a purse that is customarily used for keeping money, credit cards and other forms of payment organized. Access to the instruments in the wallet or purse is restricted by a password to avoid unauthorized payments. A certificate form must be completed in order to obtain an instrument. The certificate form obtains the information necessary for creating a certificate granting authority to utilize an instrument, a payment holder and a complete electronic wallet. Electronic approval results in the generation of an electronic transaction to complete the order. If a user selects a particular certificate, a particular payment instrument holder will be generated based on the selected certificate. In addition, a default bitmap for the instrument associated with a particular certificate is defined by the issuing agent for the certificate, and the default bitmap will be displayed when the certificate definition is completed. Finally, the number associated with a particular certificate will be utilized to determine if a certificate can be issued by a particular party.

21 Claims, 23 Drawing Sheets



U.S. PATENT DOCUMENTS

4,454,414	6/1984	Benton	235/379
4,614,861	9/1986	Pavlov et al.	235/380
4,630,201	12/1986	White	364/408
4,689,478	8/1987	Hale et al.	235/380
4,766,293	8/1988	Boston	235/379
4,799,156	1/1989	Shavit et al.	364/401
4,859,837	8/1989	Halpern	235/380
4,877,950	10/1989	Halpern	235/487
4,906,828	3/1990	Halpern	235/379
4,935,962	6/1990	Austin	380/25
4,968,873	11/1990	Dethloff et al.	235/380
4,977,595	12/1990	Ohta et al.	380/24
4,992,646	2/1991	Collin	235/375
5,016,274	5/1991	Micali et al.	380/23
5,030,806	7/1991	Collin	235/375
5,175,416	12/1992	Mansvelt et al.	235/379
5,221,838	6/1993	Gutman et al.	235/379
5,283,819	2/1994	Glick et al.	379/90
5,297,030	3/1994	Vassigh	705/25
5,420,405	5/1995	Chasek	235/379
5,440,634	8/1995	Jones et al.	380/24
5,442,791	8/1995	Wrabetz et al.	395/650
5,448,045	9/1995	Clark	235/382
5,452,352	9/1995	Talton	379/355
5,453,601	9/1995	Rosen	235/379
5,455,407	10/1995	Rosen	235/380
5,459,304	10/1995	Eisenmann	235/380
5,465,291	11/1995	Barrus et al.	379/67
5,475,826	12/1995	Fischer	395/182.04
5,476,259	12/1995	Weingardt	273/85
5,478,993	12/1995	Derksen	235/380
5,485,510	1/1996	Colbert	379/145
5,506,832	4/1996	Arshi	370/241
5,557,518	9/1996	Rosen	364/408
5,590,038	12/1996	Pitroda	385/241
5,590,197	12/1996	Chen et al.	380/24
5,671,279	9/1997	Elgamal	380/23
5,671,280	9/1997	Aucsmith et al.	380/30
5,677,955	10/1997	Doggett et al.	380/24
5,710,887	1/1998	Chelliah et al.	705/26
5,715,314	2/1998	Payne et al.	380/24
5,729,594	3/1998	Klingman	379/93.12
5,742,845	4/1998	Wagner	395/831
5,754,772	5/1998	Leaf	395/200.33
5,793,960	8/1998	Amstein et al.	395/200.01
5,796,841	8/1998	Cordery et al.	380/55

FOREIGN PATENT DOCUMENTS

0 363 122 A3	4/1990	European Pat. Off. .
0 416 482	3/1991	European Pat. Off. .
0 527 639	2/1993	European Pat. Off. .
0 256 768 B1	3/1994	European Pat. Off. .
0 363 122 B1	12/1994	European Pat. Off. .
0 658 862	6/1995	European Pat. Off. .
0 666 681	8/1995	European Pat. Off. .
0 668 579	8/1995	European Pat. Off. .
2 251 098	6/1992	United Kingdom .
WO 91/16691	10/1991	WIPO .
WO 93/08545	4/1993	WIPO .

OTHER PUBLICATIONS

Computer Shopper, AT&T Offers Low-Tech Protection for Internet: No-Deductible Insurance for Online Buyers, May, 1996, pp. 81–82.

Computer Technology Review, Digital Signatures Keep Cyberstreets Safe for Shoppers, Feb. 1996, pp. 132–134.

Computer Weekly, Web Takes the Credit; Visa, MasterCard Join Forces to Develop Secure Payment Systems for Electronic Commerce; Company Business and Marketing, Feb. 8, 1996, pp. 9–10.

Computerworld, News Shorts, Feb. 5, 1996, pp. 32–33.

Computerworld, Microsoft Provides Rapid Net Deployment Ability, Mar. 18, 1996, pp. 321–323.

Computerworld, Briefs, Mar. 18, 1996, p. 324.

Computerworld, Predictions, Apr. 29, 1996, pp. 108–110.

Computerworld, Credit-Card Authorization Set For Net, May 13, 1996, pp. 16–17.

Corporate EFT Report, MasterCard, Visa to Combine Internet Security Standards, Feb. 7, 1996, pp. 12–13.

Corporate EFT Report, Products Could Spur On-Line Transactions, Mar. 6, 1996, pp. 364–365.

Corporate EFT Report, Amex Eyes Internet Security, Mar. 6, 1996, p. 366.

Corporate EFT Report, Corporate EFT Report News Briefs, Apr. 3, 1996, pp. 230–231.

Credit Card Management, Internet Commerce Gets A Boost, Mar. 1996, pp. 404–405.

Credit Card News, Electronic Commerce Gets a Boost, Feb. 15, 1996, pp. 526–527.

Daily Mail, Now Spending Cuts Are On the Cards; Money Mail, Feb. 7, 1996, pp. 14–15.

Daily Telegraph, Card Guard Makes It Safer to Cybershop, Feb. 2, 1996, p. 63.

Daily Telegraph, Innovations: Codes to Beat the Criminal Internet, Feb. 13, 1996, pp. 534–535.

Datamation, Microsoft Plays Internet Catch-U. Microsoft & the Enterprise: I-Nets; Company Business and Marketing; Cover Story, Mar. 15, 1996, pp. 344–348.

Des Moines Register, Safe Shopping On-Line; Card Associations Agree On Internet Security, Feb. 17, 1996, pp. 520–522.

Digital Media, Turning the Page; MCI Switches From News Corp to the Microsoft Network; Letter; Company Business and Marketing Column, Mar. 12, 1996, pp. 358–360.

Discount Merchandiser, Secure Electronic Transactions, Mar. 1996, pp. 406–407.

DM News, Open Market Offers Internet Security; Clients Can Get On the World Wide Web For Less than $1,000, Apr. 3, 1995, pp. 281–282.

DM News, Mainstream Alternative For Advertisers; Business Wants to be Visible; Cybercitizens Want to Buy, Feb. 12, 1996, pp. 543–545.

DM News, Canadian Big Guns Set Sights On Skittish Cybershoppers; St. Remy Multimedia, Cogeco Cable in Quadruple Play, Feb. 19, 1996, pp. 506–508.

DM News, IBM's Commercial Online Service Will Build DBs, Track Spending, Feb. 19, 1996, pp. 509–510.

Denver Post, On-Line Car Dealer Rings Up 57 Sales In Four Months, Feb. 10, 1995, pp. 299–300.

dot.COM, Internet Data's Payment Service, Mar. 1, 1996, p. 408.

Edge: Work-Group Computing Report, Digital ID: Verisign Inc. To Provide Digital IDS For Open Market's Secure Webserver; Key Technology For Verifying the Identifies of Parties In Electronic Commerce, Aug. 21, 1995, pp. 236–237.

Edge: Work-Group Computing Report, E-Commerce: IBM Leads Industry With Comprehensive Strategy, Technologies for Electronic Commerce; Electronic Shopping, Secure Transactions, May 6, 1996, pp. 48–52.

What is claimed is:

1. A method for obtaining a certificate for a payment instrument by using a first computer with an attached display connected by a network to a second computer, comprising the steps of:

(a) displaying a certificate request form for the payment instrument on the display of the first computer for entry of one or more data elements;

(b) detecting completion of data entry into the certificate request form;

(c) assembling a request for the certificate using the one or more data elements;

(d) transmitting the request for the certificate to the second computer;

(e) creating the certificate for the payment instrument at the second computer;

(f) generating a payment instrument holder containing the payment instrument at the second computer; and

(g) delivering the certificate and the payment instrument holder to the first computer.

2. The method as recited in claim 1, wherein the payment instrument is represented in accordance with a bitmap selected based on the one or more data elements.

3. The method as recited in claim 1, including the step of determining if the certificate for the payment instrument should be granted.

4. The method as recited in claim 1, including the step of providing linkages in the payment instrument holder to other displays providing additional functions associated with processing payment information.

5. The method as recited in claim 1, including the step of prompting for an authorization code to authenticate the payment instrument.

6. The method as recited in claim 1, including the step of defining a payment method based on the one or more data elements.

7. The method as recited in claim 1, wherein the payment instrument is represented in accordance with preferences of an issuer of the payment instrument.

8. The method as recited in claim 1, wherein the payment instrument is represented in accordance with a bank's preference.

9. The method as recited in claim 1, further comprising the step of customizing the payment instrument holder using the one or more data elements.

10. The method as recited in claim 1, further comprising the step of customizing the payment instrument holder using one or more user preferences.

11. An apparatus for obtaining a certificate for a payment instrument by using a first computer with an attached display connected by a network to a second computer, comprising:

(a) the first computer under the control of software for displaying a certificate request form for the payment instrument on the display of the first computer for the entry of one or more data elements;

(b) the first computer under the control of software for detecting completion of data entry into the certificate request form;

(c) the first computer under the control of software for assembling a request for the certificate using the one or more data elements;

(d) the first computer under the control of software for transmitting the request for the certificate to the second computer;

(e) the second computer under the control of software for creating the certificate for the payment instrument;

(f) the second computer under the control of software for generating a payment instrument holder containing the payment instrument; and

(g) the second computer under the control of software for delivering the certificate and the payment instrument holder to the first computer.

12. The apparatus as recited in claim 11, wherein the payment instrument is represented in accordance with a bitmap selected based on the one or more data elements.

13. The apparatus as recited in claim 11, wherein the payment instrument is represented in accordance with user defined preferences.

14. The apparatus as recited in claim 11, wherein the payment instrument is represented in accordance with preferences of an issuer of the payment instrument on the display.

15. The apparatus as recited in claim 11, further comprising the first computer under the control of software for customizing the payment instrument holder using the one or more data elements.

16. The apparatus as recited in claim 11, further comprising the first computer under the control of software for customizing the payment instrument holder using one or more user preferences.

17. A computer program embodied on two computer-readable mediums for obtaining a certificate for a payment instrument by using a first computer with an attached display connected by a network to a second computer, comprising:

(a) a code segment on the first computer for displaying a certificate request form for the payment instrument on the display of the first computer for entry of one or more data elements;

(b) a code segment on the first computer for detecting completion of data entry into the certificate request form;

(c) a code segment on the first computer for assembling a request for the certificate using the one or more data elements;

(d) a code segment on the first computer for transmitting the request for the certificate to the second computer;

(e) a code segment on the second computer for creating the certificate for the payment instrument at the second computer;

(f) a code segment on the second computer for generating a payment instrument holder containing the payment instrument at the second computer; and

(g) a code segment on the second computer for delivering the certificate and the payment instrument holder to the first computer.

18. The computer program embodied on two computer-readable mediums as recited in claim 17, wherein the payment instrument is generated in accordance with a bitmap selected based on the one or more data elements.

19. The computer program embodied on two computer-readable mediums as recited in claim 17, further comprising a code segment on the first computer for customizing the payment instrument holder using the one or more data elements.

20. The computer program embodied on two computer-readable mediums as recited in claim 17, further comprising a code segment on the first computer for customizing the payment instrument holder using one or more user preferences.

21. A method for obtaining a certificate for a payment instrument by using a first computer with an attached display connected by a network to a second computer, comprising the steps of:

(a) displaying a certificate request form for the payment instrument on the display of the first computer for entry of one or more data elements;

(b) detecting completion of data entry into the certificate request form;

(c) assembling a request for the certificate using the one or more data elements;

(d) transmitting the request for the certificate to the second computer;

(e) creating the certificate and a bitmap for the payment instrument at the second computer; and

(f) delivering the certificate and the bitmap to the first computer.

* * * * *

EXHIBIT 7

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

INTERNATIONAL BUSINESS MACHINES CORPORATION, Plaintiff, v. GROUPON, INC. Defendant.	C.A. No. 16-122-LPS-CJB JURY TRIAL DEMANDED

SECOND AMENDED INITIAL DISCLOSURES OF DEFENDANT GROUPON, INC.

Defendant Groupon, Inc. ("Groupon"), by and through its counsel, makes the following initial disclosures in the above-captioned matter pursuant to Fed. R. Civ. P. 26(a)(1). These disclosures are made to the best of Groupon's abilities and are based on information reasonably available to it, or in its possession as of this date, following a good-faith inquiry in accordance with Rule 26. Groupon's investigation of possible witnesses and documents is ongoing and it reserves the right to further supplement and amend these disclosures to produce additional information acquired during the course of discovery, and to rely on such information as evidence in this action. These initial disclosures are made without waiver of (i) the right to object on the grounds of competency, privilege, relevancy and materiality, hearsay, or any other proper ground, to the use of any such information, for any purpose, in whole or in part, in any subsequent proceeding in this action or any other action; and (ii) the right to object on any grounds, at any time, to any other discovery request or proceeding involving or relating to the subject matter of these disclosures. All of the disclosures set forth below are made subject to the above objections and qualifications. The inclusion of any individual's identity or the identification or pro-

duction of any document or document category does not constitute an agreement or concession that the individual will be produced or that the documents exist or are discoverable.

I. INDIVIDUALS LIKELY TO HAVE DISCOVERABLE INFORMATION THAT GROUPON MAY USE TO SUPPORT ITS CLAIMS OR DEFENSES

Pursuant to Rule 26(a)(1)(A)(i), Groupon hereby identifies the following individuals likely to have discoverable information that Groupon may use to support its claims or defenses, and it also identifies the subjects of the information:

Name and Contact Information, if Known	Connection with the Case	Brief Statement of Substance of Information Known
Jim Breen c/o Fenwick & West LLP Silicon Valley Center 801 California Street Mountain View, CA 94041	Senior Software Developer, Groupon, Inc.	Design, development and operation of technology in the accused Groupon instrumentalities, including their history and development; and other matters within his personal knowledge.
Phillip Dunham c/o Fenwick & West LLP Silicon Valley Center 801 California Street Mountain View, CA 94041	Senior Manager, Groupon, Inc.	Design, development and operation of technology in the accused Groupon instrumentalities, including their history and development; and other matters within his personal knowledge.
Aileen Sandridge c/o Fenwick & West LLP Silicon Valley Center 801 California Street Mountain View, CA 94041	Vice President of Engineering, Groupon, Inc.	Design, development and operation of technology in the accused Groupon instrumentalities, including their history and development; and other matters within his personal knowledge.
Michael Mulvihill c/o Fenwick & West LLP Silicon Valley Center 801 California Street Mountain View, CA 94041	Senior Software Developer, Groupon, Inc.	Design, development and operation of technology in the accused Groupon instrumentalities, including their history and development; and other matters within his personal knowledge.

Name and Contact Information, if Known	Connection with the Case	Brief Statement of Substance of Information Known
Damien Schmitz c/o Fenwick & West LLP Silicon Valley Center 801 California Street Mountain View, CA 94041	Director, Global FP&A, Groupon, Inc.	Sales and financial information relating to the accused Groupon instrumentalities.
Jan Krems c/o Fenwick & West LLP Silicon Valley Center 801 California Street Mountain View, CA 94041	Principal Engineer, Groupon, Inc.	Design, development and operation of technology in the accused Groupon instrumentalities, including their history and development; and other matters within his personal knowledge.
Varun Sood c/o Fenwick & West LLP Silicon Valley Center 801 California Street Mountain View, CA 94041	Senior Engineering Manager, Groupon, Inc.	Design, development and operation of technology in the accused Groupon instrumentalities, including their history and development; and other matters within his personal knowledge.
Paul Davis Unknown at this time	Founding Programmer at Amazon.com	Prior art to U.S. Patent No. 5,961,601
Robert Filepp Unknown at this time	Named inventor of U.S. Patent Nos. 5,796,967; 7,072,849	Named inventor of patents-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patents-in-suit, and other matters within his personal knowledge.
Kenneth H. Appleman Unknown at this time	Named inventor of U.S. Patent Nos. 5,796,967; 7,072,849	Named inventor of patents-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patents-in-suit, and other matters within his personal knowledge.
Allan M. Wolf Unknown at this time	Named inventor of U.S. Patent Nos. 5,796,967; 7,072,849	Named inventor of patents-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patents-in-suit, and other matters within his personal knowledge.

Name and Contact Information, if Known	Connection with the Case	Brief Statement of Substance of Information Known
James A. Galambos Unknown at this time	Named inventor of U.S. Patent Nos. 5,796,967; 7,072,849	Named inventor of patents-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patents-in-suit, and other matters within his personal knowledge.
Sam Meo Unknown at this time	Named inventor of U.S. Patent Nos. 5,796,967; 7,072,849	Named inventor of patents-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patents-in-suit, and other matters within his personal knowledge.
Alexander W. Bidwell Unknown at this time	Named inventor of U.S. Patent Nos. 5,796,967; 7,072,849	Named inventor of patents-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patents-in-suit, and other matters within his personal knowledge.
Francis C. Young Unknown at this time	Named inventor of U.S. Patent No. 7,072,849	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within his personal knowledge.
Duane Tiemann Unknown at this time	Named inventor of U.S. Patent No. 7,072,849	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within his personal knowledge.
Mel Bellar Unknown at this time	Named inventor of U.S. Patent No. 7,072,849	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within his personal knowledge.

Name and Contact Information, if Known	Connection with the Case	Brief Statement of Substance of Information Known
Robert D. Cohen Unknown at this time	Named inventor of U.S. Patent No. 7,072,849	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within his personal knowledge.
Arun K. Iyengar Unknown at this time	Named inventor of U.S. Patent No. 5,961,601	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within his personal knowledge.
Heather Maria Hinton Unknown at this time	Named inventor of U.S. Patent No. 7,631,346	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within her personal knowledge.
Ivan Matthew Milman Unknown at this time	Named inventor of U.S. Patent No. 7,631,346	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within his personal knowledge.
Venkat Raghavan Unknown at this time	Named inventor of U.S. Patent No. 7,631,346	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within his personal knowledge.
Shane Bradley Weeden Unknown at this time	Named inventor of U.S. Patent No. 7,631,346	Named inventor of patent-in-suit. Likely to have information about the conception, reduction to practice, prosecution, prior art, ownership and commercialization of patent-in-suit, and other matters within his personal knowledge.

Name and Contact Information, if Known	Connection with the Case	Brief Statement of Substance of Information Known
Stanley B. Green	Prosecuting attorney of the patents-in-suit	Subject matter and prosecution of the patents-in-suit; prior art to the patents-in-suit.
Kevin M. Jordan	Prosecuting attorney of the patents-in-suit	Subject matter and prosecution of the patents-in-suit; prior art to the patents-in-suit.
David H. Judson	Prosecuting attorney of the patents-in-suit	Subject matter and prosecution of the patents-in-suit; prior art to the patents-in-suit.
Jeffrey S. LaBaw	Prosecuting attorney of the patents-in-suit	Subject matter and prosecution of the patents-in-suit; prior art to the patents-in-suit.
Paul C. Scifo	Prosecuting attorney of the patents-in-suit	Subject matter and prosecution of the patents-in-suit; prior art to the patents-in-suit.
International Business Machines Corporation	Plaintiff	Alleged ownership of the patents-in-suit; prior art; factors potentially relevant to remedies sought by plaintiff.
All individuals identified in IBM's Initial Disclosures not identified above.		*See* IBM's initial disclosures.

The following individuals are likely to have discoverable information on the subject of prior art: individuals listed in patents, publications, and other references in the file histories of the patents-in-suit, related patents and related applications. Groupon incorporates by reference into its disclosures these individuals and their contact information identified in such references. Groupon also incorporates by reference into its disclosures contact information for persons identified on prior art patents, publications, and/or products it may produce during this litigation. Groupon also identifies prior art identified by Defendants in *IBM v. Priceline et al.*, Civ. No. 1:15-cv-00137 (D. Del.).

Groupon also refers IBM to individuals identified in the initial disclosures of defendants in the related actions or prior actions involving the patents-in-suit. To the extent defendants or declaratory judgment plaintiffs in prior actions involving the patents-in-suit shared issues with those Groupon takes positions on in support of its claims and/or defenses, individuals who such defendants or declaratory judgment plaintiffs indicated as having information potentially supporting their claims/defense(s) may also have information Groupon may rely on to support its claims and/defenses. In addition, products accused by IBM of infringement may have versions constituting prior art to the patents-in-suit and Groupon may rely on information from persons involved with the development and/or commercialization of those products to support its defense of invalidity and to establish the availability of non-infringing alternatives.

Groupon's investigation, research and analysis of the issues in this case are ongoing. Groupon contemplates that it may identify additional individuals likely to have discoverable information that it may use to support its defenses and counterclaims, such as third parties in possession of information and/or devices that constitute prior art, as the case develops and may supplement its disclosure.

Groupon's investigation, research and analysis of the issues in this case are ongoing. If Groupon identifies additional individuals likely to have discoverable information, it may supplement this disclosure pursuant to Fed. R. Civ. P. 26(e).

II. DOCUMENTS IN GROUPON'S POSSESSION, CUSTODY, OR CONTROL THAT GROUPON MAY USE TO SUPPORT ITS CLAIMS OR DEFENSES

Pursuant to Rule 26(a)(1)(A)(ii), Groupon hereby discloses the following description by category and location of documents, data compilations, and tangible things in Groupon's possession, custody, or control that Groupon may use to support its claims or defenses. The following categories of documents may be located at Groupon's corporate facilities and will be produced or

made available for inspection at Fenwick & West LLP, 801 California Street, Mountain View, CA 94041 or at such other place as the parties may agree. By making these disclosures, Groupon does not represent or admit that documents falling within any of these categories exist, or that any documents that do exist are discoverable, and all objections are reserved.

Category of Documents	Location
Documents describing the structure, manufacturing and operation of the accused Groupon instrumentalities.	Groupon, c/o Fenwick & West LLP 801 California Street Mountain View, California 94041
Documents relating to the research, design and development of the accused Groupon instrumentalities.	Groupon, c/o Fenwick & West LLP 801 California Street Mountain View, California 94041
Documents relating to sales, revenues, and marketing of the accused Groupon instrumentalities.	Groupon, c/o Fenwick & West LLP 801 California Street Mountain View, California 94041
Prior art	Various Sources

Groupon's investigation, research and analysis of the issues in this case are ongoing. Groupon expressly reserves the right to supplement its identification of categories of documents pursuant to Rule 26(e) as its investigation continues.

III. COMPUTATION OF DAMAGES

Under Federal Rule of Civil Procedure 26(a)(1)(C), Groupon does not, at this time, have any disclosure regarding computations of damages, as Groupon does not, at this time, have a pending claim for damages. Groupon, however, seeks an award of reasonable attorney's fees pursuant to 35 U.S.C. § 285.

IV. INSURANCE AGREEMENTS

Groupon is currently not aware of any insurance agreement under which any person conducting an insurance business may be liable to satisfy part or all of a judgment which may be entered in this action or to indemnify or reimburse for payments made to satisfy the judgment.

Dated: August 23, 2017

Respectfully submitted,

ASHBY & GEDDES

/s Phillip J. Haack

Phillip J. Haack (*pro hac vice*)
John G. Day (#2403)
Andrew C. Mayo (#5207)
500 Delaware Avenue, 8th Floor
P.O. Box 1150
Wilmington, DE 19899
(302) 654-1888
jday@ashby-geddes.com
amayo@ashby-geddes.com

Attorneys for Defendant Groupon, Inc.

Of counsel:

J. David Hadden
Email: dhadden@fenwick.com
Saina S. Shamilov
Email: sshamilov@fenwick.com
Phillip J. Haack
Email: phaack@fenwick.com
Adam M. Lewin
Email: alewin@fenwick.com
FENWICK & WEST LLP
Silicon Valley Center
801 California Street
Mountain View, CA 94041
Telephone: 650.988.8500
Facsimile: 650.938.5200

Admitted Pro Hac Vice

CERTIFICATE OF SERVICE

I hereby certify that on this 23rd day of August, 2017, a true and correct copy of the foregoing document was served on each party through their counsel of record via email.

John M. Desmarais
Karim Oussayef
Robert C. Harrits
Laurie N. Stempler
Jon T. Hohenthaner
DESMARAIS LLP
230 Park Avenue
New York, NY 10169
Tel: (212) 351-3400
jdesmarais@desmaraisllp.com
koussayef@desmaraisllp.com
rharrits@desmaraisllp.com
lstempler@desmaraisllp.com
jhohenthaner@desmaraislp.com

Of Counsel for Plaintiff International Business Machines Corporation

David E. Moore (#3983)
Bindu A. Palapura (#5370)
Stephanie E. O'Byrne (#4446)
POTTER ANDERSON & CORROON LLP
Hercules Plaza, 6th Floor
1313 N. Market Street
Wilmington, DE 19801
Tel: (302) 984-6000
dmoore@potteranderson.com
bpalapura@potteranderson.com
sobyrne@potteranderson.com

Counsel for Plaintiff International Business Machines Corporation.

/s Phillip J. Haack
Phillip J. Haack (*pro hac vice*)

Attorneys for Defendant
GROUPON, INC.

EXHIBIT 8

Robert Harrits

From: Laurie Stempler
Sent: Friday, August 25, 2017 5:45 PM
To: Sapna Mehta; IBM Groupon Service; John Desmarais; Karim Oussayef; Robert Harrits; 'jhohenthaner@desmaraislp.com'; 'dmoore@potteranderson.com'; 'bpalapura@potteranderson.com'; 'sobyrne@potteranderson.com'
Cc: David Hadden; Saina Shamilov; Phillip Haack; Groupon_IBM_Service@Fenwick.com; 'jday@ashby-geddes.com'; 'amayo@ashby-geddes.com'
Subject: RE: IBM v. Groupon (No. 16-122) - Groupon's Second Amended Initial Disclosures

Phil,

You mentioned today that Groupon has been in contact with Mr. Davis and that Groupon intends to subpoena Amazon and Mr. Davis. Please provide Mr. Davis's contact information and the copies of the subpoenas.

Thanks.

Laurie

From: Laurie Stempler
Sent: Thursday, August 24, 2017 12:17 PM
To: Sapna Mehta; IBM Groupon Service; John Desmarais; Karim Oussayef; Robert Harrits; 'jhohenthaner@desmaraislp.com'; 'dmoore@potteranderson.com'; 'bpalapura@potteranderson.com'; 'sobyrne@potteranderson.com'
Cc: David Hadden; Saina Shamilov; Phillip Haack; Groupon_IBM_Service@Fenwick.com; 'jday@ashby-geddes.com'; 'amayo@ashby-geddes.com'
Subject: RE: IBM v. Groupon (No. 16-122) - Groupon's Second Amended Initial Disclosures

Sapna,

Thank you for the second amended initial disclosures. In addition to the changes we discussed yesterday, we see that Groupon has also identified, for the first time, third party Paul Davis. We note that you did not provide any contact information for Mr. Davis, and he has not authored any of the prior art in Groupon's invalidity contentions. Please explain why Groupon has identified Mr. Davis, identify the prior art to which he is relevant, and state whether Groupon intends to seek a deposition of or declaration from him or call him at trial.

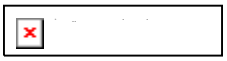
Laurie

From: Sapna Mehta [mailto:smehta@fenwick.com]
Sent: Thursday, August 24, 2017 12:21 AM
To: IBM Groupon Service; John Desmarais; Karim Oussayef; Robert Harrits; Laurie Stempler; 'jhohenthaner@desmaraislp.com'; 'dmoore@potteranderson.com'; 'bpalapura@potteranderson.com'; 'sobyrne@potteranderson.com'
Cc: David Hadden; Saina Shamilov; Phillip Haack; Groupon_IBM_Service@Fenwick.com; 'jday@ashby-geddes.com'; 'amayo@ashby-geddes.com'
Subject: IBM v. Groupon (No. 16-122) - Groupon's Second Amended Initial Disclosures

Counsel,

Attached please find Groupon's Second Amended Initial Disclosures.

Regards,
Sapna



SAPNA MEHTA
Fenwick & West LLP
Associate, Litigation Group
(650) 335-7895
(415) 281-1350
smehta@fenwick.com

EXHIBIT 9

Robert Harrits

From: Laurie Stempler
Sent: Monday, August 28, 2017 2:57 PM
To: phaack@fenwick.com
Cc: IBM Groupon Service; Groupon_IBM_Service@Fenwick.com (Groupon_IBM_Service@fenwick.com); bpalapura@potteranderson.com; dmoore@potteranderson.com; 'Day, John G.' (JDay@ashbygeddes.com)
Subject: RE: Groupon Deposition Dates

Follow Up Flag: Follow up
Due By: Tuesday, August 29, 2017 5:00 PM
Flag Status: Completed

Phil,

IBM accepts the dates for Mr. Breen, Mr. Sood, and Mr. Krems. Please provide the dates of availability for Mr. Schmitz, Ms. Sandridge, and Mr. Mulvilhill (or his substitute). In addition, following up on my separate email from Friday, August 25th, please provide Paul Davis's contact information, confirm whether Groupon has subpoenaed him and/or Amazon, and provide copies of the subpoenas.

Laurie

-----Original Message-----
From: Laurie Stempler
Sent: Friday, August 25, 2017 4:59 PM
To: 'Phillip Haack'
Cc: Sapna Mehta; IBM Groupon Service
Subject: RE: Groupon Deposition Dates

Thank you. We'll look forward to the update on Mike Mulvilhill. Will we have dates for Ms. Sandridge and Mr. Schmitz by Monday?

Laurie

-----Original Message-----
From: Phillip Haack [mailto:phaack@fenwick.com]
Sent: Friday, August 25, 2017 4:53 PM
To: Laurie Stempler
Cc: Sapna Mehta
Subject: Groupon Deposition Dates

Laurie,

I just got your voicemail. Sorry for the delay on this, I got pulled out of the office. Here are the witness dates as promised. I am following up with Groupon about Mike Mulvihill as we discussed.

Jim Breen is available on August 31 in Chicago. Varun Sood is available on September 1 in Chicago. Jan Krems is available on September 7 in Fenwick's office in Mountain View.

Best,
Phil
Sent from my phone.

EXHIBIT 10

Robert Harrits

From: Ryan Tyz <rtyz@tyzlaw.com>
Sent: Friday, September 15, 2017 6:02 PM
To: IBM Groupon Service; bpalapura@potteranderson.com; dmoore@potteranderson.com
Cc: Groupon_IBM_Service@Fenwick.com; JDay@ashbygeddes.com; Aaron Myers
Subject: Re: Subpoena for Documents to Amazon.com, Inc.

Counsel,

The Amazon code responsive to Groupon's subpoena is available for inspection at Fenwick's Mountain View office.

Regards,
Ryan

Tyz Law Group PC
Ryan Tyz
rtyz@tyzlaw.com
4 Embarcadero Center
Suite 1400
San Francisco, CA 94111
(415) 849-3578
www.tyzlaw.com

From: Aaron Myers <amyers@tyzlaw.com>
Date: Tuesday, September 12, 2017 at 10:33 AM
To: "IBMGrouponService@desmaraisllp.com" <IBMGrouponService@desmaraisllp.com>, "bpalapura@potteranderson.com" <bpalapura@potteranderson.com>, "dmoore@potteranderson.com" <dmoore@potteranderson.com>, "Groupon_IBM_Service@Fenwick.com" <Groupon_IBM_Service@Fenwick.com>, "JDay@ashbygeddes.com" <JDay@ashbygeddes.com>
Cc: Ryan Tyz <rtyz@tyzlaw.com>
Subject: Subpoena for Documents to Amazon.com, Inc.

Dear Counsel,

Please see the attached subpoena for documents to Amazon.com, Inc., that we will be serving today.

Best regards,

Aaron Myers

Tyz Law Group PC
Aaron Myers
amyers@tyzlaw.com
4 Embarcadero Center, Suite 1400
San Francisco, CA 94111

(415) 997-7794

EXHIBIT 11

Robert Harrits

From: Sapna Mehta <smehta@fenwick.com>
Sent: Tuesday, September 26, 2017 9:07 PM
To: Karim Oussayef; Robert Harrits; Phillip Haack; Moore, David E. (dmoore@potteranderson.com); Palapura, Bindu A. (bpalapura@potteranderson.com)
Cc: Groupon_IBM_Service@Fenwick.com; IBM Groupon Service; 'Day, John G.'; Mayo, Andrew C.; Saina Shamilov; David Hadden; Adam Lewin
Subject: RE: IBM v. Groupon (Del.)

Karim,

The Amazon source code is designated "HIGHLY CONFIDENTIAL – ATTORNEYS' EYES ONLY – SOURCE CODE" under the Protective Order. Presently, neither Groupon nor Fenwick has retained or compensated Mr. Davis in connection with this matter. However, Groupon expects to retain Mr. Davis. Groupon has produced all non-privileged, responsive written communications with Mr. Davis and Amazon. Groupon (and Fenwick on Groupon's behalf) first had access to the Amazon source code on September 15, 2017. Fenwick, while representing Amazon, previously had access to the code during the *Cordance v. Amazon* case that went to trial in Delaware in 2009 in which the code was an exhibit.

Regards,
Sapna

From: Karim Oussayef [mailto:KOussayef@desmaraisllp.com]
Sent: Tuesday, September 26, 2017 3:45 PM
To: Robert Harrits <RHarrits@desmaraisllp.com>; Sapna Mehta <smehta@fenwick.com>; Phillip Haack <phaack@fenwick.com>; Moore, David E. (dmoore@potteranderson.com) <dmoore@potteranderson.com>; Palapura, Bindu A. (bpalapura@potteranderson.com) <bpalapura@potteranderson.com>
Cc: Groupon_IBM_Service@Fenwick.com; IBM Groupon Service <IBMGrouponService@desmaraisllp.com>; 'Day, John G.' <JDay@ashbygeddes.com>; Mayo, Andrew C. <AMayo@ashbygeddes.com>; Saina Shamilov <sshamilov@fenwick.com>; David Hadden <DHadden@fenwick.com>; Adam Lewin <alewin@fenwick.com>
Subject: RE: IBM v. Groupon (Del.)

Counsel,

Please answer the following questions in advance of our meet and confer:

- Is the Amazon source code designated as confidential under the Protective Order?
- Has Groupon or Fenwick retained or compensated Mr. Davis in connection with this matter?
- Has Groupon produced all communications with Mr. Davis or Amazon?
- When did Groupon or Fenwick first have access to the Amazon source code?

Best,
Karim

From: Robert Harrits
Sent: Tuesday, September 26, 2017 2:58 PM
To: Sapna Mehta; Karim Oussayef; Phillip Haack; Moore, David E. (dmoore@potteranderson.com); Palapura, Bindu A.

(bpalapura@potteranderson.com)
Cc: Groupon_IBM_Service@Fenwick.com; IBM Groupon Service; 'Day, John G.'; Mayo, Andrew C.; Saina Shamilov; David Hadden; Adam Lewin
Subject: RE: IBM v. Groupon (Del.)

Sapna,

11 am pacific/2 pm eastern works for us. We can use the following dial in:

Dial-in: 866.835.1224
Conference Code 4682626058

Thanks,
Robert

From: Sapna Mehta [mailto:smehta@fenwick.com]
Sent: Tuesday, September 26, 2017 2:52 PM
To: Karim Oussayef; Robert Harrits; Phillip Haack; Moore, David E. (dmoore@potteranderson.com); Palapura, Bindu A. (bpalapura@potteranderson.com)
Cc: Groupon_IBM_Service@Fenwick.com; IBM Groupon Service; 'Day, John G.'; Mayo, Andrew C.; Saina Shamilov; David Hadden; Adam Lewin
Subject: RE: IBM v. Groupon (Del.)

Counsel,

A conflict has come up at the time we proposed for tomorrow. We're available at 11:00 am pacific.

Thanks,
Sapna

From: Sapna Mehta
Sent: Tuesday, September 26, 2017 11:36 AM
To: 'Karim Oussayef' <KOussayef@desmaraisllp.com>; Robert Harrits <RHarrits@desmaraisllp.com>; Phillip Haack <phaack@fenwick.com>; Moore, David E. (dmoore@potteranderson.com) <dmoore@potteranderson.com>; Palapura, Bindu A. (bpalapura@potteranderson.com) <bpalapura@potteranderson.com>
Cc: Groupon_IBM_Service@Fenwick.com; IBM Groupon Service <IBMGrouponService@desmaraisllp.com>; 'Day, John G.' <JDay@ashbygeddes.com>; Mayo, Andrew C. <AMayo@ashbygeddes.com>; Saina Shamilov <sshamilov@fenwick.com>; David Hadden <DHadden@fenwick.com>; Adam Lewin <alewin@fenwick.com>
Subject: RE: IBM v. Groupon (Del.)

Counsel,

Please see the attached correspondence and production of document numbered GROUP309561. We are available to meet and confer tomorrow at 10:00 am pacific. If that time works for you, please circulate a dial-in.

As I mentioned in my letter to Brian yesterday, the configuration file and utility that you requested have been available for inspection on the source code laptop since July. As a courtesy, we will provide IBM copies later today.

Regards,
Sapna

SAPNA MEHTA
Fenwick & West LLP
Associate, Litigation Group
(650) 335-7895
(415) 281-1350
smehta@fenwick.com

From: Karim Oussayef [mailto:KOussayef@desmaraisllp.com]
Sent: Tuesday, September 26, 2017 7:35 AM
To: Robert Harrits <RHarrits@desmaraisllp.com>; Phillip Haack <phaack@fenwick.com>; Moore, David E. (dmoore@potteranderson.com) <dmoore@potteranderson.com>; Palapura, Bindu A. (bpalapura@potteranderson.com) <bpalapura@potteranderson.com>
Cc: Groupon_IBM_Service@Fenwick.com; IBM Groupon Service <IBMGrouponService@desmaraisllp.com>; 'Day, John G.' <JDay@ashbygeddes.com>; Mayo, Andrew C. <AMayo@ashbygeddes.com>; Saina Shamilov <sshamilov@fenwick.com>; David Hadden <DHadden@fenwick.com>; Adam Lewin <alewin@fenwick.com>
Subject: RE: IBM v. Groupon (Del.)

Counsel,

We have not heard back from you. Please let us know when you are available today for a meet and confer on the late-produced and late-disclosed invalidity materials discussed in Robert's September 19, 2017 letter, the new references and claim charts in your final invalidity contentions, and whether Groupon has any explanation for serving its final invalidity contentions well after yesterday's 6pm ET deadline.

During the meet and confer, please also be prepared to discuss when Groupon will produce the configuration file(s) and utility responsive to Interrogatory No. 10.

Regards,
Karim

From: Robert Harrits
Sent: Tuesday, September 19, 2017 7:44 PM
To: Phillip Haack; Moore, David E. (dmoore@potteranderson.com); Palapura, Bindu A. (bpalapura@potteranderson.com)
Cc: Groupon_IBM_Service@Fenwick.com; IBM Groupon Service; 'Day, John G.'; Mayo, Andrew C.; Saina Shamilov; David Hadden; Adam Lewin
Subject: RE: IBM v. Groupon (Del.)

Counsel,

Please see attached correspondence.

Regards,
Robert

Robert C. Harrits | Desmarais LLP
230 Park Avenue | New York, NY 10169
Tel: (212) 808-2946 | Fax: (212) 351-3401
Email: rharrits@desmaraisllp.com

This email may contain confidential and privileged material for the use of the intended recipient. Any review, use, or distribution by anyone other than the addressee is strictly prohibited. If you are not the intended recipient, please contact the sender by reply email and delete all copies of this message.

EXHIBIT 12

FENWICK & WEST LLP

555 CALIFORNIA STREET, 12TH FLOOR SAN FRANCISCO, CA 94104

TEL 415.875.2300 FAX 415.281.1350 WWW.FENWICK.COM

September 26, 2017

SAPNA MEHTA

EMAIL SMEHTA@FENWICK.COM
Direct Dial (650) 335-7895

VIA E-MAIL (RHARRITS@DESMARAISLLP.COM)

Robert Harrits
Desmarais LLP
230 Park Avenue
New York, NY 10169

Re: *International Business Machines Corporation v. Groupon, Inc.*, Case No. 16-122-LPS-CJB (D. Del.)

Dear Robert:

I write in response to your September 19, 2017 letter regarding Groupon's disclosure of prior art. Groupon did not improperly delay disclosing prior versions of Amazon's website, Amazon's source code, Paul Davis, "Spinning the Web," or Yuval Fisher.

1. Prior Versions of Amazon's Website, its Source Code, and Paul Davis

During Groupon's investigation into prior art, it suspected that early versions of Amazon's website may have been prior art to the '601 patent. Groupon's counsel contacted Paul Davis—an early employee of Amazon who it believed had the requisite knowledge about the functionality of Amazon's early website—to confirm Groupon's suspicion. GROUP309559-GROUP309560. Mr. Davis was out of the country at that time and for many months following. GROUP309560. Upon his return to his consulting work in the United States, we were then able to discuss the prior art with Mr. Davis and he confirmed Groupon's suspicion. After confirming its invalidity theory, Groupon subpoenaed Amazon for the relevant source code. Groupon notified IBM of the subpoena on that same date. Groupon received verbal confirmation from counsel for Amazon that the code was available for inspection and informed IBM. *See* Sept. 15, 2017 Email from Ryan Tyz. On September 22, Groupon requested and received written confirmation from Amazon. GROUP309561. We are producing that communication herewith, and will supplement our response to IBM's Interrogatory No. 20 to include both conversations. Amazon did not serve any objections to the subpoena.

Under the Protective Order governing this case, Amazon need not produce its source code "directly to IBM," as you demand. Instead, in accordance with ¶ 12(a)(i) of the Protective Order, Amazon made the code available for both Groupon and IBM's inspections at the offices of Fenwick and West. Indeed, IBM's source code reviewer accessed the code for inspection last week.

Groupon identified Mr. Davis in its disclosures promptly after it had confirmed his ability to provide information relevant to the Amazon prior art. That is apparent from the documents you cite in your letter. *See, e.g.*, GROUP309556 (e-mail dated August 17, 2017); Groupon's Second Amended Initial Disclosures (served August 23, 2017). Groupon listed Mr. Davis' contact information as "Unknown at this time" because Groupon had not—and has not—confirmed whether Mr. Davis wishes to be contacted through counsel. Groupon will confirm the appropriate contact information for Mr. Davis, and if IBM wishes, will work with him to make him available for deposition before IBM's rebuttal expert report is due. Mr. Davis will provide testimony regarding the operation of early versions of Amazon's website and the Amazon source code. He will also testify to "the authenticity of the Amazon source code," as you request.

IBM suffers no prejudice from Groupon's reliance on prior versions of Amazon's website, its source code, or any testimony of Paul Davis. Groupon included the prior art in its final invalidity contentions served yesterday. The Amazon source code remains available for IBM's inspection. While you note that Groupon notified IBM that the source code was available "after the 6 PM ET close of fact discovery," your letter fails to explain how Groupon's notification at 6:02 PM ET prejudiced IBM. Again, IBM's source code reviewer accessed the code for inspection last week. IBM has six weeks until its rebuttal expert report is due. And Groupon has offered to work with Mr. Davis to make him available for deposition before then. Accordingly, exclusion of this highly-relevant prior art is not supported by the governing *Pennypack* factors in this Circuit. *See Meyers v. Pennypack Woods Home Ownership Assn.*, 559 F.2d 894, 904–05 (3d Cir. 1977).

2. "Spinning the Web" and Yuval Fisher

Groupon first learned of "Spinning the Web," and its author Yuval Fisher, while preparing for the deposition of Arun Iyengar, which took place on September 15. Mr. Fisher was referenced in in the file wrapper, IBM-GROUPON00000667, but the webpage of his that is referenced was not provided. Upon investigating, Groupon discovered Mr. Fisher's "Spinning the Web" book and had to obtain a copy of the book the week of the deposition. As you acknowledge, Groupon questioned Mr. Iyengar about both the book and Mr. Fisher at his deposition. Groupon produced the book and disclosed Mr. Fisher the same day. Groupon has not had any communications with Mr. Fisher.

For the reasons discussed above, IBM will not suffer any prejudice from the timing of Groupon's disclosure of the prior art and persons discussed above. IBM may still depose Mr. Davis or Mr. Fisher before its rebuttal expert report is due, and its consultant has already inspected the Amazon source code. Groupon disclosed its invalidity theories in its final contentions. Indeed, IBM agreed to extend Groupon's deadline for its final contentions until September 25, knowing that the deadline would fall after the close of fact discovery, and cannot claim prejudice from this alone. To the extent IBM contends that it is prejudiced in some other way because fact discovery has closed, Groupon is amenable to considering any reasonable

measures necessary to mitigate any such prejudice.

If there are remaining issues you would like to discuss, we are available to meet and confer tomorrow, September 27, at 10:00am pacific.

Sincerely,

FENWICK & WEST LLP

s/ Sapna Mehta

Sapna Mehta